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CONTENTS AND SUBJECT INDEX

Parental Influence on the Incidence of Cancer. C. C. Little, Sc.D., Bar Harbor, Maine 93

Postmenopausal Bleeding as a Hazard of Diethylstilbestrol Therapy. Emil Novak, M.D., Baltimore..98

The Course of Poliomyelitis. Mary S. Sherman, M.D., Chicago.....99

Relative Toxicity of Sulfamerazine and Sulfadiazine. Harry F. Dowling, M.D.; Edith Dumoff-Stanley, M.D.; Mark H. Lepper, M.D., and Lewis K. Sweet, M.D., Washington, D. C. 103

The Effect of Sulfadiazine on the Coordination and Reaction Time of Young Men. Alison H. Price, M.D., and John C. Pedulla, Philadelphia 105

Bromide Intoxication from Prolonged Self Medication with B. C. Headache Powder. Roy R. Kracke, M.D., and William R. Platt, M.D., Emory University, Ga.....107

Use of Ergotamine Tartrate for "Battle Reaction." R. G. Heath, M.D., and Florence Powdermaker, M.D., Gladstone, N. J.....111

Mental Changes in Patients with Subdural Hematoma. Morris Herman, M.D.; Jack London, M.D., and S. Bernard Wortis, M.D., New York 113

Pentothal Sodium Slough: Prevention by Procaine Hydrochloride. Capt. Charles K. Elder and Capt. E. M. Harrison, M. C., A. U. S..116

CLINICAL NOTES

Complete Transverse Cervical Myelitis. Wallace S. Brooke, M.D., Salt Lake City.....117

Pilonidal Cysts and Sinuses in Identical Twins. Paul F. Fox, M.D., Chicago 120

COUNCIL ON PHARMACY AND CHEMISTRY 120

EDITORIALS

Medical Licensure.....148

Diagnosis of Gastric Cancer.....148

Chemotherapy in Tuberculosis...149

CURRENT COMMENT

Transportation to Session.... ..149

Tuberculosis Association.....150

Transfer of Health Activities....150

"Patent Medicine" Ballyhoo.....150

MEDICINE AND THE WAR 151

ORGANIZATION SECTION 157

(Subject Index on next page)

MEDICAL LICENSURE STATISTICS FOR 1943

Forty-Second Annual Presentation of Licensure Statistics by the Council on Medical Education and Hospitals of the American Medical Association 121

State Boards of Medical Examiners 121

Boards of Examiners in the Basic Sciences 142

The National Board of Medical Examiners 144

Examining Boards in the Medical Specialties 147

A. M. A. Session CHICAGO June 12-16, 1944

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See also SAUNDERS Advertisement on Pages 3, 4, 5

A. M. A. Chicago session, transportation E-149; OS-157
Abdomen, pain with fever 177
Acetanilid, B. C. headache powder toxic ... *107
Acid, ascorbic, for anemia ab-175
Alteratives and iodides 177
Ambulance, evacuating wounded soldier 177
American Ass'n. of Basic Science Boards .. *144
Boards, credit for war service *147
Anemia in children, iron and ascorbic acid for ab-175
Anesthetists, check gases by 164
Appendicitis, obscure fever 177
Association News 157
Automobile driving and sulfadiazine *105
Aviation, evacuating wounded 177
flight surgeon's assistants 153
medical examiners 151
B. C. headache powder, intoxication *107
Basic Science board of examiners *142
certificates, basis for licensure *139; *143
examinations, subjects included in *143
laws, states having *142
"Battle reaction," ergotamine for *111
Benzene, isopropylbenzene hazard 178
Biotin, cause cancer growth? 178
Birds cannot be imported 153
Blood donations from army units 152
pressure, venous, graphic registration .. ab-171
sugar in colitis ab-172
Board Examinations 169
Book Notices 176
Books Received ..... **Adv. Page 46**
Breast cancer, milk "influence" *96
Bromide, toxic B. C. headache powder *107
Bureau of Legal Medicine and Legislation .. 170
Cancer, incidence, parental influence *93
vitamin B_1 or biotin cause? 178
Children's Bureau, health activities E-150
Chiropractors, basic science examinations .. *143
Codeine after head injury ab-172
Colitis, ulcerative chronic, metabolic and vitamin studies ab-172
Committee on Postwar Medical Service. OS-157
Conjunctivitis after sulfadiazine or sulfamerazine *103
Coordination, sulfadiazine effect on *105
Correspondence 168
Council on Medical Education and Hospitals .. 121
Council on Pharmacy and Chemistry 120
Cults, basic science examination *143
Cumene, isopropylbenzene toxicity 178
Deaf, training, Red Cross expert in 155
Deaths 165
Desoxyephedrine, use on nasal mucosa ab-173
Diabetes, insulin shortage, Netherlands 156
Diethylstilbestrol therapy, postmenopausal bleeding a hazard *98
Diphtheria in Bulgaria 156
Penicillium glaucum therapy 177
Disease, organic unity C-168
Editorials 148
Emergency Maternity and Infant Care Program OS-158
Ergotamine tartrate for "battle reaction" .. *111
Eruptions from B. C. headache powder *107
Etousa Medical Society meeting 152
Eye-hand coordination and sulfadiazine *106
Fear, ergotamine for "battle reaction" *111
Fees, license, states requiring *139
Fever after sulfadiazine or sulfamerazine. *103
obscure, with abdominal pain 177
Foreign Letters 164
Gallbladder, cancer ab-171
roentgen examination 178
Gangrene, gas, antitoxin for lend-lease 156
Gases, checking, given by anesthetists 164
Government Services 163
Graduates, Canadian, examined for license. *126
number examined by school *122
of approved schools, failures *128
of unapproved schools *138
registration (1904-1943) *137
Green soap (tincture), sterilizing 177
Growth, vitamins effect on ab-175
Hand-eye coordination, sulfadiazine affects. *106
influenza virus persists on ab-174
Head injury, codeine and pentobarbital sodium for ab-172
Headache, B. C. powder, toxicity *107
Health crisis in Netherlands 156
transfer activities to U. S. P. H. S. E-150
Hemorrhage after applying sulfonamides .. 178
Histoplasmosis in otolaryngology ab-173
Homeopaths, license examination *126
Hospitals, care for wounded soldier 177
needing interns and residents 155
Ichthyosis, vaccination in 178
Industrial hazard of isopropylbenzene 178
Influenza virus on human hand ab-174
Interns, hospitals needing 155
Internships, 9-9-9 program *135
required by medical schools *135
required by state boards *135
required for licensure *139
Iodides and "alteratives" 177
Isopropylbenzene possible toxicity 178
Kidney calculus after sulfadiazine or sulfamerazine *103
Legislation, Medical 158
Licensure *121; E-148
candidates examined *122; *124; *136
consolidated examinations *127
failure for *126; *128; *129; *142
fees required by various states *139
for relocated physician *136
foreign graduates examined for *126; *129; *139; *140; *142
foreign graduates who failed *129; *142
homeopaths examined *126
National Board Certificates as basis for .. *146
number of licenses issued *121
reciprocity and endorsement *124; *129; *130; *132
registration (annual), states requiring .. *136
registration of graduates *137; *138
registration of osteopaths *138
temporary permits *136
under accelerated program *134
U. S. citizenship requirement *139
Liver inflammation, postvaccinal ab-172
"Lucid intervals" in subdural hematoma .. *113
Malaria, estivoautumnal C-168
Malpractice, Medical Defense Union 164
Marriages 164
Medical and Surgical Relief Committee 155
Medical Education accelerated and licenses. *134
Army-Navy Program *134
premedical basic science *143
premedical course, required *135
premedical work accelerated *134
Wartime Graduate Medical Meetings ... 156
Medical Examinations and Licensure 169
Medical Practice Acts and osteopaths *138
Medical Service, postwar, Committee on. OS-157
Medical Supplies, standard for all ships 156
Medicine and the War 151
Medicolegal Abstracts 170
Meetings, Coming Meetings 169
Meninges, subdural hematoma, mental changes in *113
Menopause, hemorrhage after diethylstilbestrol therapy *98
Mental reactions with subdural hematoma .. *113
reactions with sulfadiazine *105
Milk, "influence" in breast cancer *96
Miller Bill E-150
Mononucleosis, infectious ab-172
Myelitis, complete transverse cervical *117
National Board certificates *144; *146
diplomates from individual schools *146
examinations *127; *144; *145
National Tuberculosis Ass'n. 40th year .. E-150
Netherlands, health crisis in 156
New and Nonofficial Remedies 120
News 159
Nose, drugs applied to mucosa ab-173
oily sprays ab-173
Nostrums, ballyhoo on radio E-150
Optometry Practice Acts: injunctions ... Mi-170
Organic unity and psychosomatic medicine. C-168
Organization Section 157
Osteopaths, basic science examinations *143
examined by state boards *125
registered *138
regulations, Neb., O *138
Parents, influence on cancer incidence *93
Penicillin and Penicillium glaucum therapy. 178
Pentobarbital sodium after head injury ... ab-172
Pentothal sodium slough, procaine prevents. *116
Physicians, examined by basic science boards. *144
foreign graduates, licensure. *139; *140; *142
relocated, licensure for *136
supply: additions *133; *134
supply: shortage, Netherlands 156
Pilonidal Sinus in identical twins *120
Pneumothorax, spontaneous ab-175
Poliomyelitis, natural course *99
treatment, Kenny, evaluated *99
Potassium iodide and "alteratives" 177
Procaine prevents pentothal sodium slough. *116
Proprietaries, evil of fancy names 164
Psyche, defined C-168
Psychosomatic medicine and organic unity. C-168
Queries and Minor Notes 177
Quinine intravenously in malaria C-168
Radio Broadcasts 158
Radio, "patent medicine" ballyhoo on E-150
Reaction time, sulfadiazine effect on *10
Rehabilitation office 15
Rickets increase, Netherlands 15
Roentgen fluoroscopy in gastric cancer E-14
Sarcoidosis, Boeck's disease ab-17
Schools, Medical, foreign, graduates from examined, *126; *140; (failed) *12
internship required by *13
National Board diplomates from *14
states without *12
unapproved, graduates *126; *129; *13
Sclerosis, multiple, fever therapy; prolonged rest, climatotherapy ab-17
Serum, despeciated bovine ab-17
Skin fitness for tropical service 16
Smallpox vaccination in ichthyosis 17
Soap, green, sterilizing 17
Society Proceedings 170
Specialties, examining boards in *14
Spinal Cord, degeneration after injury *11
Spine, cervical myelitis from ossified herniated disk *11
State Board Examinations 169
State Board statistics *121; E-14
Steering, sulfadiazine effect on *10
Sterilization, bacterial, of green soap 17
Stomach cancer, early x-ray diagnosis E-14
Students, Medical, basic science exams *14
Sulfadiazine, effect on coordination and reaction time *10
toxicity (relative) *10
Sulfamerazine, toxicity (relative) *10
Sulfonamides applied to open wounds 17
for typhoid 17
Technicians, WAC to recruit 15
Temperature, time necessary to record ... ab-17
Terminology, "alteratives" and iodides 17
Tissue, slough, from pentothal sodium; procaine prevents *11
Tonics and Sedatives ..... **Adv. Page 34**
Tropical service, skin fitness for 16
Tuberculosis, chemotherapy E-14
National Tuberculosis Ass'n. 40th year. E-15
Twins, pilonidal cysts and sinuses in *12
Typhoid, treatment, sulfonamides 17
Uterus, postmenopausal hemorrhage, hazard of diethylstilbestrol therapy *98
Veterans, neurotic, British army uses 16
Vital Statistics, Netherlands 15
Vitamins, effect on growth and fitness ab-17
B_1 cause cancer growth? 17
C studies in colitis ab-17
C, sulfonamides and wounds 17
K in colitis ab-17
World War II, aviation, flight surgeons' assistants 15
aviation medical examiners 15
battle reaction, ergotamine for *11
birds cannot be imported 15
blood donations, Army mobile units seek .. 15
British army use neurotic veterans 16
diphtheria in Bulgaria 15
EMIC program, additional funds for .. OS-15
Etousa Medical Society meeting 15
expert in training deaf joins Red Cross .. 15
gas gangrene antitoxin for lend-lease 15
health crisis in Netherlands 15
hepatitis after yellow fever vaccination. ab-17
heroes: Adams (M. P.) 15
heroes: Barsky (J. M.) 15
heroes: Butler (O. W.) 15
heroes: Calhoun (E. L.) 15
heroes: Eckhart (D. E.) 15
heroes: Ellis (J. W.) 15
heroes: Gezon (H. M.) 15
heroes: Grammer (J. H.) 15
heroes: Huston (H. R.) 15
heroes: Leake (W. H.) 15
heroes: McMahon (A.) 15
heroes: Nickerson (N. H.) 15
heroes: Ondash (S. W.) 15
heroes: Ralston (E. M.) 15
heroes: Simpson (W. M.) 15
heroes: Wurzel (E. M.) 15
hospital (naval): *Bedside Examiner* 15
Medical and Surgical Relief Committee .. 15
medical supplies for all WSA ships 15
Navy establishes rehabilitation office 15
nurses, summer graduate courses 15
physicians in service returning home .. OS-15
physicians, specialty board credit for *14
Sawyer (W. A.) health director UNRRA. 15
U. S. Cadet Nurse Corps 15
WAC to recruit technicians 15
Wartime Graduate Medical Meetings 15
wounded, hospitalization and evacuation .. 17
wounded in forthcoming invasion 15
Wounds, hemorrhage and sulfonamides 17
Yellow Fever, postvaccinal hepatitis ab-17

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PARENTAL INFLUENCE ON THE INCIDENCE OF CANCER

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BAR HARBOR, MAINE

This consideration of the process of parental influence in relation to incidence of cancer may be divided into three parts. The first of these will cover briefly the different mechanisms by which parents may influence the development of their progeny. The second will discuss the nature of cancer and the various levels or periods in the life of the individual at which the incidence of cancer may be affected or influenced. The third will briefly discuss the experimental evidence derived from animal studies in these specific fields of cancer research.

I. MECHANISMS OF PARENTAL INFLUENCE

By far the best understood and most completely analyzed mechanism of parental influence is that of the chromosomes.[1] Long recognized as being constant in number and of individual character as regards shape and size for any given species of animal or plant, their definite and detailed importance is now understood.

They are fixed organized structures which include a linear arrangement of specific concentrated chemical units called genes. These genes, probably enzymic in nature, act with sufficient regularity to give in each case a definite recognizable effect on the form or function of the organism. In some cases such an effect is great and is reflected in a profound difference in form and function. In other cases it is much more difficult to isolate and to describe the effects of a gene. There is, however, no evidence that the chemical basis for a gene that produces a great effect is any more definite or important than that of a gene that produces a less easily described effect. The degree of correspondence between a gene and a developed character is often complex. As a rule, any one character of the organism is affected by many genes and any one gene usually influences the development of more than one character.

Typical and orthodox mendelian inheritance finds its foundation and explanation in the chromosomes. Note, however, that genes must have material on which to work, with which to express the chemical potentialities which they possess. Evidently this material consists of the cells of which the individual is made and from which it is developing.

Cells consist, however, not only of chromosomes but of cytoplasm and of nuclear material other than chromatin as well as of scattered chromatin other than that organized into chromosomes. Therefore there exists the problem of discovering how autonomous and self perpetuating the various nonchromosomal cell components may be within a cell.

That the cytoplasm plays a role in heredity far more important than has yet been recognized seems likely. It is, in fact, possible to lose whole chromosomes or to relocate parts or sections of chromosomes without basic alterations in the general characteristic morphology of an individual. This clearly indicates that some fundamental pattern of organization is located outside the chromosomes. When and how changes in this pattern occur and how they may be recorded and regulated remain an important line of investigation for the future. The difficulty of evaluating experimentally the importance of cytoplasm in inheritance is considerable. The problem is likely to require that the nucleus which would normally function be removed or inactivated. In its place there will have to be substituted a nucleus of known genetic type but of different genetic constitution. It seems probable that this will eventually be accomplished by a combination of the technic used in maintaining both fertilized and unfertilized mammalian ova outside the body with the technics of transplantation of ova and of inactivation or destruction of germ cell nuclei by irradiation. This or some other more satisfactory approach should lead eventually to important results.

It is also evident that studies of unorganized chromatin by Claude are opening an important new line of attack on intracellular relationships. No matter how striking may be the results of observation of mendelian phenomena, the whole question of inheritance will not be understood until the relation of these chromosomal findings to the role of other cell components is understood. This fact should not discourage one, but it is mentioned to show the need for further study.

Another level at which the parent may influence the developing mammal is in the period between fertilization and implantation. Since during this time there is no direct connection between parent and offspring, it seems unlikely that important transfer of influence will occur. As far as the evidence already obtained is concerned, it bears out that impression. As further experimentation develops, however, the opportunity for transfer of influence during that period must constantly be kept in mind.

Of much more prospective importance is the period from implantation of the embryo until parturition. Although no direct transfer of blood occurs from parent to offspring, the maternal influence exerted at this time has been little understood and clearly underestimated. As an example there may be cited the work of W. L. Russell and Elizabeth Fekete, as yet unpublished. In mice the normal number of sacral vertebrae is five. In one inbred strain, however, it is six. When crosses between strains with five and with six vertebrae are made, the F_1 hybrids resemble the maternal strain in number of vertebrae more than they do the paternal

From the Roscoe B. Jackson Memorial Laboratory.

1. Morgan, T. H.: The Theory of the Gene, New Haven, Conn., Yale University Press, 1926.

strain. Furthermore, when fertilized ova from pure five vertebra strain matings are transferred to the uteri of six vertebra strain foster mothers and there complete their development, the vertebral number of the resulting embryos resembles that of their foster mother more than it does that of their own mother's strain. This extraordinary result is a straw that shows which way the wind is blowing and indicates beyond any doubt that a careful search for maternal influences will reveal other cases of interest and importance.

The final point at which direct physical exchange between parent and offspring is possible is during the period of lactation and nursing. As a general thing this opportunity for parental influence has been overlooked. I shall, however, later discuss a case of proved importance.

To summarize the mechanisms of parental influence, there are the chromosomes and the cytoplasm of the germ cells, the postimplantation period of intrauterine development and nursing as proved mechanisms. Intracellular structures such as mitochondria and other unorganized chromatin as well as influences during the period after fertilization and before implantation remain as potential but as yet unproved mechanisms.

II. NATURE OF CANCER AND OF VARIOUS PERIODS OR LEVELS IN THE LIFE OF THE INDIVIDUAL AT WHICH THE INCIDENCE OF CANCER MAY BE AFFECTED OR INFLUENCED

This discussion will be frankly from an experimental rather than from a clinical point of view. Such criteria of malignancy as excessive rate of metastasis and invasion of surrounding or underlying normal tissues are of little basic importance in defining or in understanding the origin or nature of the cancer process. Cancer is cancer whether it is growing at the site of its origin or in tissue culture or in certain hosts in which it has been transplanted. In any or all of these situations it is a part of the living and growing tissue of the individual in which it arose. In any or all cases it is its progressive and continued power of cell division that distinguishes it from the rest of the body in which it originated.

It is well, however, to remember that cell division (growth) is the natural objective and climax of activity of the normal healthy cell. One must not forget that the protozoa are examples of a power of growth that has lasted without a break since animal life began. It is normal and basic for the cell to metabolize and to divide. It is in a biologic sense "abnormal" for it to sacrifice this basic activity and to replace it by the assumption of some specialized form of function the duration of which is definitely limited.

The mammalian body is the product of a balanced interaction of various inhibitors, regulators and selectors of growth resulting in just such cell specialization. Organization is the product of the establishment of such a balance under conditions which faithfully repeat a definite order of events. Form and function become correlated and predictable.

So true is this that one has come to think of such organisms as mammals as being normal and typical manifestations of cellular activity or of biologic processes. This point of view is a natural human conceit, excusable but undesirable nevertheless because it is not scientifically accurate.

As a matter of fact the primitive power of cell division and ability to grow is still the only known method of adequate and complete biologic survival. In this respect cancer merely possesses and utilizes a normal and basic function of the healthy and uninhibited animal cell.

It seems entirely probable that all healthy animal cells have this ability for growth if one only knew how to release it. The usual behavior of a cell in relation to growth has come to be considered as the natural one. This is again an unwise interpretation based on subconscious satisfaction with the existing order.

In tissue culture the cancer cell is not malignant. It does no harm. It speedily and effectively outgrows most other types of cell. The only thing that makes it sinister, abnormal and an outlaw is the fact that it ordinarily arises in an environment pledged to limitation, inhibition, regulation and selective opportunity for growth. None of these things are recognized by the cancer cell, which is engaged in living independently with a high degree of primitive biologic effectiveness.

It is also common to speak of cancer originating as the result of "stimulation." This is largely because cancer appears as a contrast to the inactive and inhibited cells about it. The evidence as it exists today supports an interpretation that cancer is the result of releasing the cell from inhibition quite as much as, if not more than, it does the hypothesis of stimulation.

Artificial parthenogenesis of frog's eggs with a needle prick has been considered "stimulation," whereas it could be perhaps better described as release of some inhibitory mechanism and a demonstration of the inherent power of the egg cell to divide, for cell division without combination or conjugation with another cell is the primitive and basic form of biologic behavior.

Ultraviolet rays on the ears of rodents actually damage or kill many cells. Yet around these killed or damaged areas cells may appear to be "stimulated." Is it not much more simple to believe that the lighter exposures to ultraviolet or other radiation may disrupt or destroy the action of growth inhibitors and thus release the basic potentialities of the formerly restricted cell? Heavier doses would then destroy not only the inhibitors but the cell itself. Such an interpretation agrees with the physical description of the effects of irradiation—makes the effect of irradiation consistently a destructive process and does not require that it first be considered a stimulant and then a destructive agent.

A normal salamander completes its span of life as an orderly, organized, controlled and balanced system. Yet if a limb is removed it begins a local rapid growth to regenerate a new one. One could scarcely consider the radical injury of amputation a stimulus. Rather it results in an unbalanced growth control formerly present and releases cells which before were inhibited so that they resume primitive growth function.

One type of mammalian twin arises by the division into two parts of an embryo which up to that time had followed the usual course and rate of growth by cell division. Thereafter each half of the embryo attains a degree of growth characteristic of a complete individual. It is evident, therefore, that a latent power of growth was released by the division of the embryo. In this case it is difficult to prove or even to hypothesize the existence of "stimulation" while removal of normal inhibitions by the breaking of the usual organized control obviously has occurred.

All of this question of inhibitor release versus stimulation needs far more discussion and consideration than can here be undertaken. It will suffice to emphasize that it is more logical and satisfactory to accept the maximum rate of cell division as a standard than it is to deal with artificial norms based on various controlling

environments from which significant departures can be and are frequently made. What is "usual" in the mammalian body is not the normal, natural, functional completeness of the animal cell. Actually, cancer cells approach this condition much more closely than do their highly differentiated, restricted or specialized neighbors in the body.

Let us now consider the levels at which control of growth may be operative. By so doing one may perhaps obtain some idea of the great complexity of the problem of incidence of cancer and of the inheritable and transmissible influences which may affect it.

First is the potential rate of growth inherent in the cell itself. Woodruff's [2] lines of paramecia possessed characteristic differences in rate of division under identical environmental conditions. The single animal cell differed in the rate at which it completed the metabolic cycle preparatory to reorganization on the basis of two units instead of one. Furthermore, it transmitted this characteristic potentiality for growth to its cell descendants. Castle and Gregory showed that under the same conditions of environment the fertilized ova of rabbits of a large strain divided more rapidly before implantation than did the fertilized ova of rabbits of a small strain. Unfortunately, sufficient data on the rate of division of the fertilized ova of reciprocal F_1 hybrids between large and small strains are not available. Such data would do much to determine whether the difference in rate of division is cytoplasmic in nature.

Differences in rates of mitosis in tissue cultures of tumors provided with abundant food seem, however, to show that an intracellular mechanism may be concerned in the rate of cell division.

All through the process of embryonic development there exists the possibility of growth-controlling influences which may arise from interaction of cells on one another. Such influences might be general, depending on basic metabolic factors, or local, depending on the site or on the degree of nutrition of various groups of cells. As the process of differentiation proceeds, the evidence of the existence of selective, restrictive, inhibitory "organizers" increases. Rates of growth become more and more characteristic of specific tissues and organs. The endocrine glands appear to give off hormones, some of which may not interfere with regulation of growth in most parts of the body but have limited areas which they influence. Others may have a more general effect. All are immensely important in establishing and maintaining internal regulation and balance. Cyclic changes in hormone utilization may alternately release and inhibit activity of growth in localized areas. Opportunities for serious biologic disturbances in both the progressive and the regressive phases of such cycles are certain to result and have been recorded.

The rate at which and the extent to which various dietary elements are received, digested, utilized and stored or excreted also introduces a whole group of factors that materially affect growth and its control. Here again intracellular differences as well as intercellular variations may occur. Structural as well as functional changes may be involved. It would seem probable that among this group of influences, broadly interpreted, will be found the great unexplained residue of factors that determine the degree of metabolic activity which expresses itself in pigment formation and distribution and in the degree of development of many morphologic abnormalities. In this field also the effect of parent on offspring would be most obscure and attenuated. This would follow because the opportunity for origin of individual variations in reaction would be millions of times as great as would be the chance that a parental influence could determine exactly what that response should be.

After a period of effective and balanced function the internal environment of a mammal begins its most critical experience. Complex interrelationships begin to vary or to break down as various specialized tissues and organs begin to pay the price of restricted activity and to wear out. The strong centralized control of the period of optimum organization weakens. The phenomena of "involution" is usually mentioned as being characteristic of this period, but it has always seemed that "revolution" might better express the facts. Various component cells, tissues and organs compete with one another for nutrition and naturally receive varying amounts of food. They also receive varying amounts of those regulators and inhibitors of growth which formerly sufficed to control the situation. It is not surprising that some of them break loose from these weakened central controls and begin independent growth. In all of these levels of activity, hereditary or transmissible influences may be operative. They may affect the basic power of growth within the individual cell. They may affect any phase—general or local—of the process of embryonic development. They may affect the rate and extent of origin and function of the endocrine glands and the response of tissues and organs to hormonal influence or to various dietary elements. They may affect the rate and order in which tissues and organs wear out.

When one realizes then that such influences may be exerted through the chromosomes, the cytoplasm of the egg, the secretions of the fallopian tube and the uterus before implantation, through the placenta during intrauterine development and through the milk or other contacts during lactation, one realizes how vital it is to set up experimental conditions in which the number of variables is reduced to a minimum. Also there will develop grounds for the conviction that the methods for controlling growth and the conditions under which they are applied are so numerous and so complex that the incidence of cells or areas which break loose from that control to form cancer will be varied in time, place, extent and causation. There may be some etiologic influences more general than others, but the complete futility of expecting a single unified causative agent for all cancer is at once evident.

Complicated and difficult as the situation may appear, it is far from discouraging. It must be remembered that recognition of the elements which make up a problem is the first step in its final analysis and toward its eventual solution.

III. EXPERIMENTAL EVIDENCE

Among the cases in which chromosomal influences have been demonstrated in the causation of cancer, those dealing with carcinoma of the lung in mice are the most striking. In all such experiments on chromosomal influences it is necessary to show that the influence of the two parents on the incidence of cancer in female progeny is equal.

Lynch [3] has given conclusive experimental evidence of this fact in a series of crosses between strains that differed in incidence of carcinoma of the lung. Bittner [4] has reported a cross between two strains of mice which

2. Woodruff, L. L.: J. Exper. Zool. **2**: 585-632, 1905.

3. Lynch, C. J.: J. Exper. Med. **43**: 339-355, 1926.

4. Bittner, J. J., in Biology of the Laboratory Mouse, edited by G. D. Snell, Philadelphia, Blakiston Company, 1941, p. 263.

gave, in virgin females, no carcinoma of the lung in one strain and 90 per cent in the other. The F_1 hybrids saved as virgin females produced 87.5 per cent. The F_2 hybrids produced 67.3 per cent. He pointed out that this result coincided closely with the expectation based on the action of a single dominant mendelian gene. Heston [5] has shown that in his material the effect of one gene was not so clear and that possibly several were involved. He was, however, able to present evidence of linkage of one and possibly of two genes which influenced the incidence of carcinoma of the lung with other known mendelian genes. This is, of course, strongly indicative of chromosomal influence.

Chromosomal influence also plays an important part in determining the incidence of lymphosarcomas and fibrosarcomas in mice. It is also a factor in the incidence of mouse leukemia, although it is not the only etiologic agent involved. Its part in causing the usual type of mammary tumors in mice seems to be relatively a small one.

One of the clearest of the ordinary mechanisms of parental influence on the incidence of cancer in mice is that of the milk in mammary tumors. In 1935 the staff of the Jackson Laboratory [6] demonstrated a strong maternal influence in the causation of these tumors. Further studies by Bittner definitely showed that the source of the milk could fundamentally alter the incidence of mammary adenocarcinomas. Large numbers of F_1 generation hybrids in a certain cross made by Bittner [7] brought out this fact in a striking manner. Young female mice from a mother of a high tumor strain and a father of a low tumor strain when nursed by a female of a high tumor strain gave a 95 per cent incidence of mammary tumors. Similar F_1 females fostered by females of a low tumor strain gave zero per cent. In contrast, F_1 females from a mother of "low" tumor strain and a father of "high" tumor strain nursed by a "low" strain female gave 8 per cent. When they were nursed by a "high" strain female the incidence rose to 93 per cent.

The effect of the foster mother was clear. The nature of the influence transferred from parent to offspring is, however, not so clear. It seems certain that there are morphologic differences in the mammary glands of mice of "low" tumor strain and of "high" tumor strain. Those of the latter are more extensive and also have definite groups of epithelial cells which do not respond to hormonal contacts as regularly as do the surrounding cells. These are largely absent in the former. Fostered mice show the same general type of mammary gland structure as their foster mother.

The "influence" transmitted in the milk is apparently not confined to that medium. Bittner [8] found evidence that it could be transferred to some degree by transplants of spleen. Woolley, Law and Little [9] have shown that it can be transmitted by inoculations of whole blood. Nursing, however, provides a natural means of transfer, which seems to show that the influence must be received through the surface of the skin and/or the digestive tract as well as by inoculation.

Evidence of an influence on the incidence of mammary tumors acting independently of lactation and exerted by the maternal parent between the period of fertilization of the ovum and parturition has been obtained by Fekete and Little.[10] It is not conclusive, but it is highly suggestive. Thus C57 black mice, a low tumor strain, when nursed by dba high tumor females according to Van Gulik and Korteweg [11] and Murray [12] gave from 9 to 13 per cent of mammary tumors. Mice of the C57 stock descended from ova transferred from this strain to the uteri of dba high tumor mice and nursed by their foster mother gave tumors in 50 per cent, a striking increase. In the opposite type of transfer, dba mice fostered by C57 low tumor black mice give 11.4 per cent of tumors. On the other hand, the development of transferred dba ova into C57 mice followed by nursing C57 black foster mothers gave no tumors in 29 mice. These experiments are being continued and extended, and it is hoped that quantitative differences more exactly indicative of the degree of intrauterine influence will be definitely established.

A clear but possibly transitory effect of the influence of the foster mother on mice descended from transferred ova has also been demonstrated by Cloudman.[13] In this case the effect was measured by the reaction of mice to transplanted tumors. This experiment was interesting in that the effect was in one direction only. For example, tumor L946, which is a fibrosarcoma originating in C57 black mice, grew in 300 mice of that strain without an exception. It also grew in all 36 C57 mice which were descendants of black ova grown in dba mice. Fifty-two pure dba mice gave 13 positive and 39 nonsusceptible animals. This is a total of 25 per cent positive. One hundred and seven descendants of dba ova grown in C57 mice gave a ratio of 55 positive to 52 negative, or 51.3 per cent positive. Using another tumor, a melanoma S91 which grew in all of 200 dba mice, Cloudman found that it also grew in all of 46 descendants of dba ova grown in C57 mice. This tumor in 52 pure C57 mice grew in 6 and failed to grow in 46, a total of 11.5 per cent positive. In 71 descendants of C57 ova grown in dba mice the ratio was 26 positive to 45 negative, or 38 per cent positive. Again, further studies are needed to determine a firm quantitative basis for analysis of the problem. The general principle seems, however, to be established in this particular material.

How much of the effect observed by Cloudman was due to intrauterine influence and how much to a lactation influence is not clear. Law,[14] however, using a transmissible lymphoid leukemia of mice LL449, studied only foster nursing and found that it had a definite influence on whether or not the young so fostered would be susceptible to leukemia when they were inoculated.

Successful growth of transplanted tissue has been repeatedly shown over a period of the last thirty years by Little,[15] Strong, Bittner, Gorer, Cloudman, Murray, Spangler [16] and others to have a firm basis of mendelizing genes. The appearance of evidence for other than genic influences is therefore unexpected and intriguing and suggests that the complete domination of chromosomal control of parent and progeny relationships in mammals is definitely not the case under certain conditions.

5. Heston, W. E.: J. Nat. Cancer Inst. **3**: 79-82, 1942.
6. Staff of Roscoe B. Jackson Memorial Laboratory, Science **78**: 465-466, 1933.
7. Bittner, J. J., in Biology of the Laboratory Mouse, p. 258.
8. Bittner, J. J.: Pub. Health Rep. **54**: 1827-1831, 1939.
9. Woolley, G. W.; Law, L. W., and Little, C. C.: Cancer Research **1**: 955-956, 1941.
10. Fekete, E., and Little, C. C.: Cancer Research **2**: 525-530, 1942.
11. Van Gulik, P. J., and Korteweg, R.: Proc. Nederl. Akad. v. Wetensch. **43**: 891-900, 1940.
12. Murray, W. S.: Cancer Research **1**: 790-792, 1941.
13. Cloudman, A. M.: Science **93**: 380-381, 1941.
14. Law, L. W.: Science **93**: 381-382, 1941.
15. Little, C. C., in Biology of the Laboratory Mouse.
16. Spangler, J. M.; Murray, J. M., and Little, C. C.: J. Nat. Cancer Inst. **3**: 123-130, 1942.

The search for other than chromosomal strain differences which influence incidence of cancer depends, first, on the isolation and maintenance of strains homogeneous within reach as regards chromosomal genetics and differing from one another in the same respect. By using various types of crosses and thus being able to contrast genetic variation with variation in both internal and external environment acting on uniform genetic material, one can begin to get a picture of what some of the strain differences mean in a biologic or even in a chemical way.

By this sort of technic interesting differences in hormonal balance have been disclosed. Woolley, Fekete and Little,[17] by early gonadectomy in three different strains of mice, have found three distinct and characteristic responses on the part of the adrenal glands:

In strain C57 black the mammary tissue remained rudimentary, secondary sex characters were typical of castrates and the adrenal glands showed no particular change in size and in form. The vagina remained closed or with a delayed and minute opening.

In strain dba, the mammary tissue after some months of inactivity began to develop. The uterus also increased in size and improved in muscular tone, and the vagina opened normally at the usual time. The adrenal glands showed both hypertrophy and hyperplasia in the cortex. The submaxillary glands, a rather delicate barometer of sexual differentiation, became of the "female" type. Some mammary tumors were formed in both sexes of gonadectomized animals.

In strain CE, after a period of quiescence, the submaxillary glands swung to the male type and mammary tumors were not formed, but hyperplasia of the adrenal glands continued until it produced cortical carcinomas of that gland. These carcinomas were themselves "androgenic" and were able to produce "masculinizing" effects even when transplanted into mice other than the one in which they originated.

To revert for a moment to the discussion of stimulation versus removal of inhibition, it is hard to see how gonadectomy could after months of inactivity "stimulate" the adrenals. It is much easier to imagine the gonads as normally exerting an inhibitory reaction on adrenal growth and to expect that the absence of this inhibiting influence would allow the adrenal glands to express perhaps a characteristic hormonal level of the strain in the older age groups. Continuation and extension of this type of experiment may do much to help the analysis of the factors that produce internal environmental balance. From that point one might be able deliberately to produce types of unbalanced hormonal influences which would reveal new relationships.

Such differences as those described are now being investigated from a genetic point of view. They naturally provide a new order of variation with which to work, for if a controlled but abnormal internal environment had not been created the differences between the strains would not have appeared.

Other technics have been combined and used to disclose biologic differences which would otherwise have remained hidden. One of these is parabiosis, or the fastening together of two individuals by surgical operation. This technic has been used with interesting results by Cloudman[18] in studying the reaction of mice to a transplantable tumor, C198. This tumor is probably a reticuloendothelioma and was first found in the liver. Its growth is ordinarily restricted to the stock in which it originated. If, however, animals of that stock are used as parabionts with a nonsusceptible stock and are inoculated with the tumor, they transfer their susceptibility to their ordinarily nonsusceptible parabiont partner. Various interesting tendencies of certain organs in hybrids produced by Cloudman to become the site of growth of tumor implants cannot be considered in detail here because of their complexity. It may, however, be stated that parabiosis, like early castration, is an unusual and important method of placing the organism in an environment which overthrows the ordinary internal balance; it thus reveals differences between inbred strains and their hybrids which can be used for further analysis of how the normal balance is created and maintained.

In order to visualize and summarize the vehicles of transmission of parental influence and the levels at which they may operate, they may be presented as in the accompanying tabulation. Any vehicle of parental influence may theoretically operate at any of the listed

Transmission of Parental Influence

Vehicles of Parental Influence	Levels of Potential Activity of These Influences
1. Chromosomes	1. Rate of growth inherent in cell
2. Cytoplasm of germ cells	2. Embryonic development (a) local (b) general
3. Other intracellular structures	3. Origin and function of endocrine glands
4. Preimplantation period of development	4. Response of tissues to hormonal influence
5. Postimplantation period of development	5. Response of tissues to dietary influence
6. Nursing	

potential levels and thus produce a large number of different possible combinations of biologic processes.

I might go on citing examples of the steadily growing mass of interesting evidence that is being derived from the invasion of the inner environment of mammals of controlled genetic constitution by experimental technics which distort or upset the balance of that environment at times and in places where the organism has formerly completely controlled it. The most that one can do now, however, is to block out, as I have attempted to, some of the newer and more suggestive fields where biology is using genetic methods and experimental physiologic alteration of the internal environment as alternating weapons to drive knowledge further into the processes of origin, maintenance and operation of that remarkably balanced organization, the mammalian body.

Unfortunately the eyes, on which one usually so greatly relies, cannot invade that living system. By utilizing inbred strains whose reactions are to a high degree constant, one can, however, make that constancy an ally and use it to reveal in clearcut contrast to the normal the results of such additions or subtractions of substances and material, either chemical or biologic, which one wishes to make.

Already enough has been seen to inspire confidence in this method. A vast amount of territory remains to be covered. The final campaign is far from being finished. From the beach head now held, however, one may expect continued and fascinating progress with increasing speed and of greater significance in the future.

17. Woolley, G. W.; Fekete, E., and Little, C. C.: Proc. Soc. Exper. Biol. & Med. **45**: 796-798, 1940; Science **97**: 291, 1943.
18. Cloudman, A. M.: Cancer Research **3**: 47-52, 1943.

POSTMENOPAUSAL BLEEDING AS A HAZARD OF DIETHYLSTILBESTROL THERAPY

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An important contribution to the management of certain functional gynecologic disorders was the introduction of diethylstilbestrol (stilbestrol), and this highly estrogenic nonhormonal drug is achieving increasingly wide employment. Its indications and likewise its limitations are in general those applying to the natural estrogenic hormones, and, like the latter, its most extensive application has been in the treatment of the vasomotor symptoms of the menopause. When such symptoms are sufficiently severe to constitute a troublesome problem, the resort to estrogens, including diethylstilbestrol, is rational and the results are good.

This is not the place to review the whole problem of the management of menopausal women, to emphasize that estrogenic therapy is only a part of this management or to weigh the advantages and disadvantages of diethylstilbestrol as compared with the natural estrogens, or the so-called conjugated and synthetic estrogens. The fact remains that diethylstilbestrol is extensively employed and that in most cases it has many advantages over the natural estrogens, the chief of these being its relative cheapness as compared to the latter, and its greater degree of effectiveness when given by the convenient oral route. The fact that in a certain proportion of cases its use is not possible because of disagreeable though not dangerous toxic symptoms is of course a disadvantage, but this proportion is far less than the high figures, as high as 80 per cent, originally reported by some observers. In my own experience the figure would be from 10 to 15 per cent, and this appears to be about the average noted by most gynecologists.

My purpose in this short communication is to warn against indiscriminate and excessive dosage with diethylstilbestrol especially in the menopausal group of cases, because of the frequency with which this produces abnormal uterine bleeding. Vasomotor symptoms are usually most pronounced after menstruations begin to be skipped or when the function has apparently ceased altogether. The improper use of diethylstilbestrol in such cases, while giving relief to the flushes and sweats, brings about a return of bleeding which will disturb both physician and patient. The natural and proper suspicion in cases of postmenopausal bleeding is of cancer of the uterine body, assuming that examination has ruled out vaginal, cervical or adnexal lesions. Such a suspicion will usually impel the gynecologist to subject the patient to diagnostic curettage.

As a matter of fact, if sufficient diethylstilbestrol or, for that matter, any other estrogen should be given, such disconcerting bleeding would be the rule and not the exception. There seems to be no doubt that the risk in this respect is greater with diethylstilbestrol than with the natural estrogens, probably because of its higher estrogenic potency rather than because of any qualitative difference in its effect on the endometrium.

The bleeding in these cases is obviously the result of drops in the estrogenic level, occurring most characteristically after temporary withdrawal of the drug but not infrequently noted even when the use of the estrogen has been continuous over a long time. As in all other hormone reactions, there are definite individual variations in different endometriums as regards sensitivity to estrogenic stimulation. It is difficult, therefore, to set arbitrary figures for safe dosage from this standpoint.

There are, however, certain simple practical safeguards which can be taken and which have been violated in an increasingly large number of instances of postmenopausal bleeding cases which have come under observation following the employment of diethylstilbestrol. A considerable number of rather flagrant instances of this sort have come under my own observation during the past two years. What is said here of diethylstilbestrol applies to other forms of estrogenic therapy as well, though perhaps to lesser degree. The logic of all such treatment is based on the fact that the unpleasant symptoms arise because of the diminution and final cessation of ovarian function. It should be remembered, however, that the hormonal equilibrium tends to adjust itself spontaneously after a variable time, with disappearance of the symptoms. When the latter are absent or slight, no substitutional estrogenic therapy is necessary, and nature may be allowed to take its course. When the symptoms are sufficiently accentuated, estrogenic therapy will almost always give relief, but only enough should be given to control the symptoms. There is even some reason to believe that too prolonged treatment may postpone the desired reestablishment of the equilibrium; that is, that the duration of the menopause may be increased.

The prophylactic use of estrogens, advocated by some, has always appeared to me to be highly illogical, and unnecessary for reasons embodied in the foregoing remarks. When the drug is used therapeutically, the dose should be based chiefly on the severity of the symptoms, average daily extremes varying from 0.1 mg. to 0.5 mg. Only rarely are larger doses necessary. Furthermore, since the effects are fairly prompt, the dosage often is necessary for only a short time, sometimes for only a few days, especially since the tendency of the symptoms is to occur in exacerbations.

The most prevalent abuse in the employment of diethylstilbestrol is to prescribe a routine daily dose to be taken more or less indefinitely. There should be no such thing as a routine dose or, as it is even spoken of, maintenance dose. I have recently seen a patient whose original vasomotor symptoms were very moderate but who had been given a supply of 5 mg. tablets for nightly use and who, when I saw her, had already taken over 250 doses. In addition to postmenopausal bleeding she exhibited a high degree of nerve tension not unlike that characterizing the so-called premenstrual tension. I have seen similar tension produced by long continued and excessive dosage with natural hormone preparations.

Every gynecologist has encountered many patients who, after a wrong start, have convinced themselves that unless they have a "shot" of one or other estrogenic preparation dire results will follow in the form of exaggerated symptoms. This species of hormone addiction is psychologic rather than pharmacologic. Unless properly advised by the physician, the patient can fall into similar habits with diethylstilbestrol, although the temptation with oral administration is probably not so great as with the more glamorous "needle treatments," of which some patients are so proud.

While postmenopausal bleeding of the type under discussion is most often due to faulty methods of dosage and administration, it may at times be noted

after relatively low dosage. In such cases it is wiser to resort to the natural hormone preparations or to one of the conjugated or synthetic hormones. In the occasional case in which the endometrium appears abnormally sensitive to estrogens one might prefer to employ testosterone, which is effective in the relief of the flushes, without the risk of producing bleeding.

As to the management of the postmenopausal bleeding which may follow estrogen therapy, this must be based on the circumstances of the case, and it cannot always be the same. When the bleeding occurs in women known to have gotten large amounts of diethylstilbestrol, simple discontinuance of the drug is usually wiser than immediate resort to diagnostic curettage. This conservative policy should entail no worthwhile risk to the patient if she is kept under observation. On the other hand, if the dosage of the drug has been modest, or if it is not known, the hazard of a "post hoc, propter hoc" assumption would be greater, and diagnostic curettage will usually be the wiser plan.

I have had the opportunity of studying the endometriums in a small group of cases in which bleeding had followed diethylstilbestrol therapy, and the prevailing picture, as one would expect, has been that of benign hyperplasia. Since hyperplasia is a not uncommon finding even in women who have had no estrogenic therapy, one cannot in all cases be sure that such a picture after diethylstilbestrol therapy is the direct result of the latter. Repetition of the biopsy sometime after discontinuance of the diethylstilbestrol would be more conclusive on this point, though not usually necessary on purely clinical grounds. In 1 of my own cases such a follow-up study was clearly indicated and proved instructive:

A woman aged 49 had had x-ray induction of the menopause four years previously because of functional bleeding. One year ago, because of menopausal symptoms, a daily dosage of 1 mg. of diethylstilbestrol was begun and kept up until one month previously, when the drug was stopped because of gastrointestinal disturbance. Five days later there was a bloody discharge, lasting one day. She was curetted, the slide showing a typical hyperplasia, although a local pathologist had diagnosed adenocarcinoma. The suggestion was made that the curetting be repeated in a month, with of course no further diethylstilbestrol therapy. The tissue from the second curetting showed a typically retrogressive postmenopausal endometrium.

There has been considerable discussion as to whether or not excessive therapy can actually incite the development of cancer. Without reviewing this very broad problem, suffice it to say that the consensus is that no such hazard pertains to the clinical employment of estrogens in any customary therapeutic dosage. Since our knowledge of the possible carcinogenic role of the estrogens is still very incomplete, it is a wise policy to avoid unnecessarily large doses and to avoid such treatment altogether or hold it to a minimum for persons who harbor any so-called precancerous lesion or those who have a clearcut family history of cancer.

The not infrequent occurrence of estrogen induced proliferative and hyperplastic changes in women well beyond the menopause is well established (Novak and Yui,[1] Novak and Richardson,[2] Taylor [3]). The source of the estrogen after regression or removal of the ovaries is believed to be the adrenal cortex. The fact that postmenopausal hyperplasia is not infrequently associated with adenocarcinoma would suggest at least a predisposing role for postmenopausal estrogenic stimulation of the endometrium and should indicate the wisdom of avoiding prolonged and excessive estrogen therapy after cessation of ovarian function.

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SUMMARY

While diethylstilbestrol is of the greatest value in the treatment of troublesome menopausal symptoms, it has certain disadvantages. One of these, which has been much less stressed than its importance warrants, is the production of postmenopausal uterine bleeding, often leading to the clinical suspicion of cancer and not infrequently calling for diagnostic curettage.

The risk of producing such undesirable bleeding can be held down to a small minimum by a few simple precautions. The chief of these are (1) to avoid altogether the use of diethylstilbestrol or any other estrogen unless the symptoms are clearly menopausal and unless they really constitute a problem to the patient, (2) to avoid so-called prophylactic estrogenic therapy, (3) to avoid unnecessarily large doses and (4) to avoid any routine fixed dosage for prolonged or indefinite periods, resort being made to the drug only if and when needed.

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THE NATURAL COURSE OF POLIOMYELITIS

A REPORT OF 70 CASES

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Following the first 10 cases of poliomyelitis in Louisiana [1] in 1841 there were a few small outbreaks scattered throughout the United States. Except for Caverly's report of 132 cases which occurred in Vermont in 1894,[2] these cases were neither sufficiently numerous nor well enough studied to assume much importance, and it was not until the first major epidemic in 1907 [1] that the disease began to attract much attention in this country. This epidemic followed by two years the big Scandinavian outbreak and was thought to have been stimulated by increased immigration to this country.[1]

Since 1907 poliomyelitis has been constantly in evidence, and every year sees its epidemic. Reports have been numerous and, though few of them are detailed enough to be statistically valid, together they bring out a few obvious basic facts. Since consideration of these seems lately to have been abandoned in favor of philosophic controversy, it would seem appropriate to mention them again.

It was Wickman who first called attention to the high incidence of nonparalytic poliomyelitis, which, after studying 1,025 European records, he conservatively estimated at 25 to 56 per cent of all cases.[3] This group, which varies with the epidemic, obviously affects the recovery rate, and no appraisal of results of any treatment can be made without an accurate statement as to the number of cases which were of this type.

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Support of hospital beds for patients in this study was furnished by the Home for Destitute Crippled Children, affiliated with the University of Chicago.

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It has also been known for years that epidemics vary not only as to geographic location but also as to the attack rate, the severity of general symptoms, the incidence of bulbar involvement, the incidence and severity of paralyses and, of course, the mortality. Thus in Scandinavia in 1905 there was a death rate of 15.7 per cent in 1,445 cases.[3] In New York City in 1916 there were 8,991 cases with a 25 per cent mortality.[1] Sydney, Australia, in 1937 had 252 cases with a death rate of less than 1 per cent.[4] In San Antonio in 1942 there was a mortality of 6.9 per cent in only 87 cases.[5] In general the death rates in recent years have been always lower than in the older epidemics. This appears to be due to recognition of abortive cases, which formerly were not usually reported even when recognized.

Until recently there has never been any disagreement with the idea that the percentage of recovery, depending as it does on the factors just outlined, also varies with the epidemic rather than with the treatment. This is borne out by reports from many locations. In the 1937 Queensland, Australia, epidemic 100 of 147 patients had no loss of function.[6] The same year in Sydney 179 of 250 patients were completely cured.[4] Ogilvey says, after studying the Brooklyn cases of 1916, "The percentage may be expected to be, . . . excluding those who died, 49 per cent paralyzed and 51 per cent nonparalyzed."[7] This agrees well with Wickman, who examined 605 of his paralytic patients eighteen months after their acute disease and found 44 per cent to have recovered completely.[3] A paper on the Kansas epidemic of 1923 is even more optimistic and estimates that with good care "from 75 to 85 per cent of the cases will show marked improvement or complete recovery."[8] In Michigan in 1931 there were 124 cases, in which there were 83 complete recoveries (it is to be noted that 77 of these were nonparalytic).[9] In the Los Angeles epidemic of 1934, when there were over 1,800 cases, complete recovery in 80 per cent had occurred in less than a year.[10] "In 1941 in Maryland 68 per cent of the patients recovered and 14 per cent more have a slight residual weakness. Only 2 per cent have complete disability."[11] In the same year in Pennsylvania there were 741 cases, of which 56 ended fatally; 54 per cent of the survivors recovered without residual weakness, 19 per cent of whom were nonparalytic and 35 per cent of whom made a spontaneous recovery from paresis.[12] Manitoba that year had 966 cases with 1.8 per cent deaths, and in only 10 per cent of all cases was there residual weakness.[13] In all of the groups just quoted the so-called orthodox treatment was used with whatever personal variations suited the physician, and no significant difference can be seen to be related to the type of therapy employed.

There have been a few attempts to evaluate statistically the percentage recovery of paralyses under slightly differing forms of therapy. Rogers reports 282 cases treated at the Hospital for Ruptured and Crippled with three different "orthodox" methods, and no difference in amount or rate of recovery was noted.[14] Henry and Johnson, writing of 728 cases in Philadelphia in 1932, report 605 that were examined about nine months later. At that time 265 (43.8 per cent) of the patients, 128 of whom had had paresis, were entirely normal; 248 (41 per cent) still had some weakness, and 12 (2 per cent) were totally paralyzed. There were 13.2 per cent deaths.[15]

The report of McCarroll and Crego has been widely quoted by the supporters of Miss Elizabeth Kenny as proof that under the "orthodox treatment" only 12 per cent of recoveries can be expected.[16] But the 160 cases reported were all paralytic and therefore the complete recovery of 12 per cent cannot be compared to the recovery rate of a group which includes also the nonparalytic.[17] From a perusal of these reports one may conclude with Schein that "the general outlook in paralytic cases, even of the greatest severity, is never so bad as frequently pictured, and one may be fairly optimistic about the ultimate outcome of the ordinary case.[18]

Since the advent of Miss Kenny on the American scene in 1940 most of our literature has dealt with the use and abuse of her method of therapy. When the medical advisory committee of the National Foundation for Infantile Paralysis recommended in 1941[16] that her treatment be made available to the country, there resulted numerous articles on the subject. Many of them are mere statements of opinion, such as the following: "There is no doubt that her treatment abolishes pain and stiffness and minimizes the occurrence of deformities. It prevents contractures, lessens the degree of paralysis, and . . . produces a higher percentage of recoveries than any other method. . . . The Kenny treatment is one of the most outstanding advances in orthopedic surgery since the time of Hugh Owen Thomas and Robert Jones."[19] Several papers, such as those of Deacon[20] and of Garceau, Martz and Reith,[21] offer equally enthusiastic conclusions in spite of a complete absence of recorded data.

There are a few reports of small groups of cases such as those of Daly[22] and Bingham.[23] Not only do these papers fail to classify their cases as to initial involvement, but their descriptions of end results are extremely vague evidence on which to conclude that the Kenny method is the therapy of choice. In a paper from San Antonio on the 1942 epidemic, more details are given. There were 87 cases, 6 of which were fatal. Of the 81 survivors 30 are listed as completely cured,

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17. McCarroll, H. R., and Crego, C. H.: An Evaluation of Physiotherapy in the Early Treatment of Poliomyelitis, J. Bone & Joint Surg. **23**: 851 (Oct.) 1941.

18. Schein, A. J.: Orthopedic Aspects of Poliomyelitis, New York State J. Med. **37**: 1661 (Oct. 1) 1937.

19. Lewin, P.: The Kenny Treatment of Infantile Paralysis During the Acute State, Illinois M. J. **81**: 281 (April) 1942.

20. Deacon, A. E.: The Treatment of Poliomyelitis in the Acute Stage, Canad. Pub. Health J. **33**: 275 (June) 1942.

21. Garceau, G.; Martz, C., and Reith, P.: The Kenny Treatment of Infantile Paralysis, J. Indiana M. A. **35**: 677 (Dec.) 1942.

22. Daly, M. M. I., and others: The Early Treatment of Poliomyelitis with an Evaluation of the Sister Kenny Treatment, J. A. M. A. **118**: 1433 (April 25) 1942.

23. Bingham, R.: The Kenny Treatment for Infantile Paralysis, J. Bone & Joint Surg. **25**: 647 (July) 1943.

but it is noted that 25 were nonparalytic; 16 had "slight weakness," 12 "moderate weakness" and 17 "severe weakness." [5] For some reason these were interpreted as better than average results. Coon, writing in 1943, again sedulously avoids any details but says that 22 out of 29 cases were benefited by Kenny therapy and makes the following startling conclusion: "When the older method of treatment is being used, contractures are noted and cause difficulty when the plaster casts are removed. When the Kenny method is used, contractures do occur in paralytic cases but are not due to the use of casts." [24]

Dyson, in analyzing the treatment of 39 patients in 1942 at Kenny Cottage in Des Moines, reports one year later that 28 were entirely well. Three had slight limps, 2 walked with "Kenny sticks" and 4 were still in the hospital. Of these 4, 2 were able to take a few steps and 2 were totally paralyzed but could sit up. Excluding the 4 who were still hospitalized at that time, the average hospital stay was 61.1 days.[25]

There remain the analyses of Miss Kenny's own cases in this country. She herself says in 1942 that she has treated "a total of 84 in the acute and early stages of the disease. Out of this number 8 lower limbs will have residual paralysis and 2 upper limbs—1 upper limb with good recovery but not normal. This would mean over 80 per cent full recoveries." And later "I can claim that the condition of muscle paralysis from the disease can be reduced from 80 per cent paralyzed to 20 per cent paralyzed in the extremities and from almost 100 per cent residual paralyses of the abdominals to 100 per cent recoveries in this group." [26]

In two papers which purport to analyze the 26 cases in Miss Kenny's first Minnesota group there is little agreement. The earlier paper, which gives no data as to type of case but outlines the treatment in detail, offers this summary: "To date 26 patients with acute anterior poliomyelitis have been treated. . . . Eleven have already been discharged as completely normal. The average hospital stay of these patients was 36.2 days. Of the remaining 9, 1 has paralysis of both legs which will probably be permanent. . . . The other 7 are progressing satisfactorily but it will take time to estimate their final recovery." [27] The later paper, describing the same 26 patients, concludes as follows: "At the end of eighteen months after beginning the Kenny treatment of a series of 26 patients in the acute and subacute stage it can be stated that these patients have all made a far more satisfactory recovery than they would have made by any previously known method." [28] The paper fails to make the following conclusions, which may be drawn from the data included in the body of the paper:

Of the 26, only 10, or 38.4 per cent, are listed as normal after eighteen months. Six of these 10 were either nonparalytic or bulbar patients with no peripheral paralysis. The hospital stay of these patients, some of whom were still institutionalized at that writing, is listed in detail, and, according to the figures presented, averages 179.5 days. The shortest stay was twelve days and the longest eighteen months. It is noteworthy that 1 nonparalytic patient was hospitalized for ten weeks. This hardly seems to support the claim that the Kenny method is saving of time, money and hospital days.

Because of the divergence of opinion noted and because of the recent disregard of the natural history of poliomyelitis cases, it seems appropriate to present an account of experiences in the epidemic of 1943. It is true that nothing new is offered and that other such series may be found in the literature. I hope only to call attention once more to the fact that the amount of ultimate recovery from acute poliomyelitis depends primarily on the amount of initial involvement of the central nervous system.

The Chicago poliomyelitis epidemic of 1943 presented the unusual opportunity of following a group of 70 unselected patients through the entire course of their acute disease and of supervising carefully their subsequent care. This paper comprises a report of the 1943 group six months after their acute attack. Obviously this is too short an interval to permit a conclusive study. However, it can surely be assumed that the nonparalytic will not change, and since all the other survivors of this group seem now to be stationary or progressing satisfactorily it is unlikely that future examinations will reveal much change except for improvement.

TABLE 1.—*Type of Cases*

Total number of patients	70	
Males	36	
Females	34	
Bulbar involvement alone	9	(13.0%)
Bulbospinal involvement	9	(13.0%)
Spinal paralysis	39	(55.5%)
Nonparalytic	13	(18.5%)

TABLE 2.—*Age Distribution*

Under 2 years	6
From 2 to 5	10
From 5 to 10	26
From 10 to 15	16
Over 15	12

Of the 70 patients 36 were males and 34 females. The distribution of cases as to age and type is shown in the first two tables.

All patients received the same general treatment, which was essentially that required by any acute febrile disease. After a spinal puncture (which was postponed in all bulbar cases and on a few very ill paralytic patients) they were kept at absolute bed rest with as nearly normal a diet as possible and with adequate fluids given parenterally when necessary. They were disturbed only for rapid physical examinations, and often these were done several times daily. These examinations apparently had no effect on the extent or duration of muscle weakness. Bulbar patients were given nothing by mouth, had constant suction and oxygen via nasal catheters, postural drainage and all fluids parenterally. The respirator was used only for intercostal weakness, which was significant in 3 cases. Fifty-three of the patients received convalescent or adult blood serum in accordance with the program of the Illinois State Public Health Service. No specific effect from the administration of the serum was observed.

"Kenny" packs, splints or special apparatus were not used. As "spasm" and stiffness of the back and hamstrings appeared to be present in all cases, and since they seemed of no significance except as symptoms, no

24. Coon, H. M.: The Wisconsin Experience with the Kenny Treatment Methods, Wisconsin M. J. **42**: 783 (Aug.) 1943.
25. Dyson, J. E.: The Kenny Treatment in Acute Poliomyelitis, J. Iowa M. Soc. **33**: 375 (Aug.) 1943.
26. Kenny, E.: Infantile Paralysis: Importance of Treatment in the Acute Stage, New York State J. Med. **42**: 1645 (Sept. 1) 1942.
27. Cole, W. H., and Knapp, M. E.: The Kenny Treatment of Infantile Paralysis, J. A. M. A. **116**: 2577 (June 7) 1941.
28. Pohl, J. F.: The Kenny Treatment of Anterior Poliomyelitis (Infantile Paralysis): Report of the First Cases Treated in America, J. A. M. A. **118**: 1428 (April 25) 1942.

treatment was directed toward them. These manifestations disappeared spontaneously in every case within a few weeks.

Patients were discharged as soon as they were definitely convalescent even though the quarantine period was not yet over. The average time of hospitalization for nonfatal cases, 17.9 days, is analyzed in table 3. On discharge from the hospital all patients were given careful instructions as to their bed care at home and were subsequently followed at short intervals in the outpatient department. The nonparalytic and patients with mild weaknesses were given no further treatment.

Seven patients who had severe weakness had their early activity supervised by physical therapists in the hospital. Physical activity was instituted as soon as fever and pain had subsided. Instruction consisted in early active exercise under water until the patients could do more with comfort. Then as rapidly as possible they were got up and encouraged in normal use of the extremities without attempting education of individual muscles but with constant emphasis on function of the body as a whole. Special attention was given the development and maintenance of proper gait.

TABLE 3.—*Time of Hospitalization*

Nonparalytic	13.0 days
Bulbar and bulbospinal	17.4 days
Paralytic (original admission only)	19.9 days
Paralytic (including readmission for physical therapy)	23.0 days
Average without fatal cases	17.9 days
Fatal cases	3.5 days

TABLE 4.—*Results*

1. No detectable weakness at any time	13	(18.5%)
2. Those who had paresis but who are not now handicapped	38	(54.3%)
a. No detectable weakness now	7	
b. Functionally insignificant weakness (including isolated palatal imbalance)	31	
3. Functionally significant weakness but requiring no further therapy	6	(8.6%)
4. Severe weakness requiring braces or surgery	7	(10%)
5. Deaths (4 bulbar, 2 spinal)	6	(8.6%)

The current status of the group is shown in table 4. Group 1 includes the 13 so-called "nonparalytic." [29] These patients all had the clinical signs of poliomyelitis and had an elevated cell count in the spinal fluid, but at no time did they have any demonstrable weakness or reflex change. They all made an uneventful recovery and have since remained perfectly normal.

The 38 patients in group 2 all had easily detectable weakness. Of these 25 had initially mild involvement, which was not expected ever to be significant. Thirteen of these patients had severe involvement. One had an almost flail right shoulder. The remaining 12 were patients with bulbar poliomyelitis, 3 of whom had complete dysfunction of palatal and pharyngeal muscles but no further involvement. Three of the others had such severe weakness of the entire shoulder girdle and of all neck flexors that they could not sit up or use either arm. Four had severe enough involvement of one lower extremity so that they could not stand. Two had pronounced left facial palsies, and 1 had weakness of the entire right side. All of these pareses were profound, but no patient had a complete paralysis. Five patients from the initially mild group and 2 from the severe group now have no detectable weakness. Every 1 of the other 31 is now back doing whatever he did before his illness, is without symptoms, and is without any handicap except that 3 of those who had bulbar weakness have occasional slight difficulty in swallowing, and 1 of them has a facial palsy which, while it is improving continuously, is still obvious.

The 6 patients in group 3 have pronounced weaknesses, which however do not require further care and which do not interfere with their leading a normal life. One of them had extensive involvement of the right shoulder. He now has easily detectable weakness but can use the arm for ordinary activity, is steadily improving and is expected soon to be in group 2. Three of this group had profound involvement of both lower and one upper extremity, and 1 had severe paresis of one lower extremity. These 4, all of whom are adults, now show only moderate weakness of one lower extremity, all are walking without any support and with only slight limps, and all are continuing their usual occupations without difficulty. The other patient in this group had initially an extremely severe quadriplegia with enough involvement of every muscle in all extremities so that she was expected to be bedridden or at least confined to a wheelchair. She is now back in regular school with weakness, it is true, in most of her muscles, but walking without a limp and able to keep up with the other children without special privileges.

In group 4 are the 7 patients who are handicapped and will need surgery or braces. One of these has a weak foot and will need a stabilization operation. Another who had a severe quadriplegia with intercostal involvement has very weak shoulders and a weak hand but is able to attend regular school. He will probably later be improved by a shoulder fusion and an opponens plasty. Each of 3 children had one flail arm. One of these has improved and will be further benefited by shoulder arthrodesis. Two patients are wearing braces. One of these, a woman who later went elsewhere for hot pack treatment, has flail lower extremities and is reported now to be on crutches with two long leg braces. The other, who has one flail lower extremity, is now walking unsupported except for a long leg brace. He has resumed his normal school activities.

In group 5 are listed the six deaths, a mortality rate of 8.6 per cent. Two of these patients had rapidly ascending paralyses and 4 had bulbar involvement. Of the latter, 2 were moribund on admission. It may be noted that four deaths among 18 bulbar cases is a low mortality rate. Levinson says "It is seen in this group of 50 patients that there was a mortality of 42 per cent. This is a relatively low figure, because experience teaches that superior poliomyelitis is attended by a mortality varying from 60 to 80 per cent." [30]

SUMMARY

Of a group of 70 patients with acute anterior poliomyelitis, which except for supportive therapy was allowed to run its natural course, 10 per cent have enough residual weakness to require braces or future surgery, 72.8 per cent have no residual weakness or such slight weakness that it is barely detectable, and 8.6 per cent have functionally significant weakness which does not require further therapy and which does not constitute a handicap to a normal life. There were six deaths (8.6 per cent). The average hospital stay, excluding the fatal cases, but including readmissions for supervised physical activity, was 17.9 days.

29. By this term is meant the patient in whom one is unable to demonstrate muscle weakness. It is not implied that there is no damage to the central nervous system but only that there is no objective motor sign of such damage.

30. Levinson, S. O.: A Five Year Review of Anterior Poliomyelitis in the Chicago Area, Illinois M. J. **70**: 296 (Sept. 1) 1936.

RELATIVE TOXICITY OF SULFAMERAZINE AND SULFADIAZINE

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Sulfamerazine (monomethylsulfadiazine) was synthesized by Roblin and his co-workers [1] and has been used by several investigators in the treatment of a variety of clinical infections.[2] Since its therapeutic activity is apparently comparable to that of sulfadiazine, sulfathiazole and sulfapyridine, it is important to determine whether it possesses any advantage over those drugs with regard to toxic reactions. Evidence is conclusive [3] that sulfadiazine is less toxic than sulfathiazole and sulfapyridine, and for this reason it is recommended more frequently for systemic use than any other sulfonamide at the present time. In order to evaluate the toxicity of the more recently introduced sulfamerazine, we have at this time reviewed the records on all the patients observed by us to whom sulfamerazine [4] or sulfadiazine [4] was administered. These patients were in the wards of the Gallinger Municipal Hospital [5] or in the private practice of one of us.

Altogether there have been 900 patients treated with sulfadiazine and 428 with sulfamerazine (table 1). Seventy-three patients showed a toxic reaction following the use of sulfadiazine, an incidence of 8.1 per cent, while 41, or 10.0 per cent of the patients receiving sulfamerazine, experienced toxic effects. There was no appreciable difference in the incidence of vomiting, mental confusion or leukopenia following the use of the two compounds. No patients developed acute hemolytic anemia or leukocytosis after the use of sulfamerazine, whereas each of these complications appeared twice in the group of patients who were given sulfadiazine. Fever, dermatitis or conjunctivitis resulting from sulfonamide administration, or any combination of them, was present in 2.9 per cent of the patients receiving sulfadiazine and in 3.7 per cent of those receiving sulfamerazine. This difference is not statistically significant.

The greatest difference between the two drugs occurred in the incidence of renal calculi. This pathologic condition was considered to be present if there was pain in the region of the kidneys, gross hematuria, definite anuria or oliguria or any combination of these. Defined in this way, renal calculi resulting from sulfamerazine administration occurred in 3.5 per cent of the patients receiving that drug as compared with an incidence of 1.3 per cent in the patients receiving sulfadiazine, representing a difference which is statistically significant.

Since there is evidence that the administration of alkalis along with sulfadiazine and sulfamerazine [6] will diminish the incidence of renal calculi, sodium bicarbonate was given to a few of the patients receiving each of these drugs. Most of these patients were in the sulfamerazine group, however, so that the lesser incidence of renal calculi observed in the patients receiving sulfadiazine cannot be explained on the basis of alkali therapy.

Both sulfadiazine and sulfamerazine were given according to several dosage regimens in different groups of patients. In some instances there were irregularities in dosage due to increases or decreases during the course of therapy or to intravenous or subcutaneous administration of the sodium salts of these drugs. All the remaining patients, who received sulfadiazine or sulfamerazine orally according to certain established regimens without any variation during the course of therapy, have been compared with respect to the toxic reactions observed in each dosage group of each drug. These data are presented in table 2.

TABLE 1.—*Toxic Reactions Following Administration of Sulfadiazine and Sulfamerazine*

	Sulfadiazine		Sulfamerazine	
	No. of Patients	Per Cent	No. of Patients	Per Cent
Vomiting	11	1.2	5	1.2
Renal calculus	12	1.3	15	3.5
Drug fever, dermatitis and/or conjunctivitis	26	2.9	16	3.7
Mental confusion	13	1.4	3	0.7
Leukopenia (with or without granulopenia)	7	0.8	4	0.9
Acute hemolytic anemia	2	0.2	0	0
Leukocytosis	2	0.2	0	0
Total patients with toxic reactions	73	8.1	41	10.0
Patients with no toxic reactions	827	91.9	387	90.0
Total patients treated	900	100	428	100

Sulfadiazine has been given at two dosage levels. The high dosage consisted of 6 Gm. immediately and 1 Gm. every four hours; the low dosage consisted of 2 Gm. statim and 0.5 Gm. every four hours. Sulfamerazine was given at three dosage levels: The high dose was identical with the high dose of sulfadiazine (6 Gm. followed by 1 Gm. every four hours). The intermediate dose was the same as the low dose of sulfadiazine (2 Gm. initially and 0.5 Gm. every four hours). The low dosage was 1 Gm. immediately and 0.5 Gm. every eight hours.

The levels of free sulfadiazine or sulfamerazine in the blood of a number of patients in each of the groups were studied. These determinations were usually made every day or every other day during the time the drug was being administered. The average free blood sulfonamide level has been determined for each of these patients, and the highest, lowest and median average blood levels for each dosage group are listed in table 2. The median of these averages was 11.0 mg. per hundred

From the George Washington Medical Division and the Infectious Disease Service, Gallinger Municipal Hospital, and the George Washington University School of Medicine.

1. Roblin, R. O., Jr.; Williams, J. H.; Winnek, P. S., and English, J. P.: Chemotherapy: 1. Substituted Sulfanilamidopyridines, J. Am. Chem. Soc. **62:** 2002, 1940.

2. Gefter, W. I.; Rose, S. B.; Domm, H. A., and Flippin, H. E.: Studies on 2-Sulfanilamido-4-Methyl-Pyrimidine (Sulfamerazine, Sulfamethyldiazine) in Man: III. The Treatment of Meningococcic Meningitis, Am. J. M. Sc. **206:** 211-216 (Aug.) 1943. Flippin, H. F.; Gefter, W. I.; Domm, A. H., and Clark, J. H.: Studies on 2-Sulfanilamido-4-Methyl-Pyrimidine (Sulfamerazine, Sulfamethyldiazine) in Man: IV. The Treatment of Pneumococcic Pneumonia, ibid. **206:** 216-221 (Aug.) 1943. Flippin, H. F.; Reinhold, J. G., and Gefter, W. I.: Sulfamerazine: Clinical Evaluation in 400 Cases, M. Clin. North America **27:** 1447-1462 (Nov.) 1943. Hageman, P. O.; Harford, C. G.; Sobin, S. S., and Ahrens, R. E.: Sulfamerazine: A Clinical Study of Its Pharmacodynamics, Therapeutic Value and Toxicity, J. A. M. A. **123:** 325-330 (Oct. 9) 1943. Hall, W. H., and Spink, W. W.: Sulfamerazine: Clinical Evaluation in 116 Cases, ibid. **123:** 125-131 (Sept. 18) 1943. Lepper, M. H.; Sweet, L. K., and Dowling, H. F.: The Treatment of Meningococcic Infections with Sulfadiazine and Sulfamerazine (Sulfamethyldiazine, Monomethylsulfadiazine), ibid. **123:** 134-138 (Sept. 18) 1943.

3. Dowling, H. F., and Lepper, M. H.: Toxic Reactions Following Therapy with Sulfapyridine, Sulfathiazole and Sulfadiazine, J. A. M. A. **121:** 1190-1194 (April 10) 1943. Plummer, N., and Wheeler, C.: The Toxicity of Sulfadiazine: Observations on 1,357 Cases, Am. J. M. Sc. **207:** 175-184 (Feb.) 1944.

4. Sulfamerazine and sulfadiazine were supplied by the Lederle Laboratories, Incorporated.

5. The members of the visiting and resident staffs of the Georgetown and George Washington Medical Division cooperated.

6. Fox, C. L.; Jensen, O. J., and Mudge, G. H.: The Prevention of Renal Obstruction During Sulfadiazine Therapy, J. A. M. A. **121:** 1147-1150 (April 3) 1943. Gilligan, D. R.; Garb, S.; Wheeler, C., and Plummer, N.: Adjuvant Alkali Therapy in the Prevention of Renal Complications from Sulfadiazine, ibid. **122:** 1160-1165 (Aug. 21) 1943.

cubic centimeters for patients receiving the high dose of sulfamerazine, which was considerably higher than the median of 7.55 mg. per hundred cubic centimeters found in patients who were given the same dose of sulfadiazine. Likewise the median of the average blood levels for patients receiving the intermediate dose of sulfamerazine was higher (6.4 mg. per hundred cubic centimeters) than that achieved by the same dose of sulfadiazine (5.25 mg. per hundred cubic centimeters) but lower than the median observed in those patients receiving high doses of sulfadiazine. The median of the average blood levels of 30 patients receiving the low dose of sulfamerazine was 3.95 mg. per hundred cubic centimeters.

On the basis of these values, the incidence of toxic reactions observed in each dosage group can be examined. Renal calculi were present in only 3 (1.5 per cent) of 195 patients who received the large dose of sulfadiazine, while none of the 140 patients who received the small dose of this drug developed a renal complication. On the other hand, a higher incidence (8.6 per cent) of renal calculi was observed in the patients who received the high dose of sulfamerazine. It will be recalled that these patients had the highest levels of all the groups studied. Among the patients who were given the intermediate dose of sulfamerazine, 3.4 per cent developed renal calculi as compared with 1.5 per cent of those who received the high dose of sulfadiazine, although the average free blood sulfamerazine levels for this group were lower than those observed in the patients who received the high dose of sulfadiazine. Furthermore, among 58 patients who received the lowest dose of sulfamerazine (1 Gm. statim and 0.5 Gm. every eight hours) one calculus developed, an incidence of 1.7 per cent, whereas no calculi occurred in 140 patients who received the low dose of sulfadiazine. In the latter groups the patients receiving sulfadiazine had higher free blood sulfonamide levels than did those receiving sulfamerazine.

When the incidence of renal calculi occurring in patients receiving sulfamerazine in certain doses is compared to those observed in patients receiving identical doses of sulfadiazine, the differences are statistically significant. On the other hand, when the comparison is made according to the level of free sulfonamide in the blood the differences, although consistently showing that more calculi developed following sulfamerazine than after sulfadiazine administration when the blood levels were approximately the same, were not statistically significant.

Drug fever, dermatitis and conjunctivitis likewise were more frequent in the patients receiving sulfamerazine, even in the smallest doses, than they were among the patients receiving sulfadiazine. There was a suggestive relationship of the incidence of leukopenia to higher doses of sulfadiazine, but this is less apparent with respect to sulfamerazine.

Lyons and Balberor [7] have found that the incidence of drug fever, dermatitis and conjunctivitis is more frequent in patients receiving a second course of sulfonamides than in patients receiving only one course. Two of us [8] have shown that the incidence of fever following second courses of sulfapyridine, sulfathiazole or sulfadiazine, while greater than that found during the first course of each of these drugs, is nevertheless proportional to the frequency of fever during the first course. The incidence of these complications following a second course of a drug is therefore a good index of the tendency of a sulfonamide to produce this kind of sensitivity. Utilizing this method to compare the two sulfonamides under consideration, we found (table 3) that, among 60 patients who experienced no toxic reaction to the first course of sulfadiazine and who received after varying intervals a second course of the same sulfonamide, 3, or 5 per cent, developed fever, dermatitis, conjunctivitis or a combination of these. Among 93 patients given a second course of sulfamerazine 7 (7.5 per cent) developed one of these toxic reactions. This difference, while not statistically significant, is suggestive, since it is in conformity with the more frequent occurrence of febrile reactions following initial courses of sulfamerazine than following sulfadiazine.

TABLE 2.—*Toxic Reactions to Oral Administration of Sulfamerazine and Sulfadiazine Encountered in Adult Patients, Classified According to Dosage*

Drug	Dose, Gm.		Average Free Drug Level on Patients Frequently Tested				Important Toxic Reactions Encountered						
	Initial	Every 4 Hrs. Thereafter	Number of Patients	Lowest, Mg. per 100 Cc.	Median, Mg. per 100 Cc.	Highest, Mg. per 100 Cc.	Total Patients Treated	Renal Calculus		Fever, Rash, Conjunctivitis		Leukopenia	
								No.	%	No.	%	No.	%
Sulfadiazine	6	1	34	4.5	7.55	13.0	195	3	1.5	3	1.5	4	2.1
	2	0.5	42	2.4	5.25	11.8	140	0	0	2	1.0	0	...
Sulfamerazine	6	1	23	4.6	11.0	19.8	35	4	8.6	2	5.9	0	...
	2	0.5	51	3.1	6.4	12.4	87	3	3.4	3	3.4	2	2.3
	1	0.5 every 8 hrs.	30	f.t.*	3.95	8.6	58	1	1.7	1	1.7	0	...

* Only a faint trace of drug was present, which was too low to calculate numerically.

COMMENT

In the search for the ideal sulfonamide, therapeutic efficiency comes first. There is no apparent difference in the ability of sulfapyridine, sulfathiazole, sulfadiazine and the newly introduced sulfamerazine to combat human infections. Accordingly, in order to decide whether sulfamerazine will (1) displace the other sulfonamides, (2) take its place alongside them as being of equal value or (3) be discarded altogether, we must next examine the factor of relative toxicity. Since sulfadiazine is considered by the majority of observers to be the least toxic of the sulfonamides in use before

TABLE 3.—*Fever, Dermatitis and/or Conjunctivitis Following a Second Course of Sulfadiazine or Sulfamerazine*

	Total Patients Receiving Second Course	Patients with Fever, Dermatitis and/or Conjunctivitis During Second Course	
		Number	Per Cent
Sulfadiazine	60	3	5.0
Sulfamerazine	93	7	7.5

7. Lyons, R. H., and Balberor, H.: Febrile Reactions Accompanying the Readministration of Sulfathiazole, J. A. M. A. **118:** 955-958 (March 21) 1942.

8. Dowling, H. F., and Lepper, M. H.: Drug Fever Accompanying Second Courses of Sulfathiazole, Sulfadiazine and Sulfapyridine, Am. J. M. Sc. **207:** 349-353 (March) 1944.

the advent of sulfamerazine, we have compared the toxic reactions resulting from the use of sulfamerazine and sulfadiazine. Very little difference was observed between the two drugs except in the number of instances of renal calculi and drug fever (with or without dermatitis and conjunctivitis). These reactions were more frequent in the patients receiving sulfamerazine.

Certain investigators have suggested that lower doses of sulfamerazine can be used than of sulfadiazine, because the levels obtained with the former drug are greater. We have confirmed the fact that these higher levels develop.

On the other hand, Gilligan [9] has recently shown that approximately twice as much sulfamerazine as sulfadiazine is bound to the serum proteins. If the portion bound to proteins is therapeutically inactive, and there is laboratory evidence to this effect,[10] then much higher levels of sulfamerazine must be maintained to provide therapeutic efficiency equal to that of sulfadiazine.

In order to obtain these, it may prove necessary to administer similar doses of the two drugs. This we have done and have found that there was a statistically significant increase in the number of renal calculi resulting from sulfamerazine therapy over those observed during the administration of the same dose of sulfadiazine.

Even if it should subsequently be proved that the same blood levels of sulfamerazine and sulfadiazine are equally effective, and consequently that lower doses of sulfamerazine than of sulfadiazine may be given with the same therapeutic results, we have found a suggestively higher incidence of toxic reactions resulting from sulfamerazine than from sulfadiazine when cases were compared according to the levels obtained in the blood. If continued investigation confirms these results, it would seem reasonable to conclude that sulfadiazine is still the drug of choice among the sulfonamides for systemic use but that sulfamerazine can be used with equal effectiveness in certain cases in which sulfadiazine is not suitable.

SUMMARY AND CONCLUSIONS

1. Toxic reactions occurred in 10.0 per cent of 428 patients to whom sulfamerazine was administered, compared with 8.1 per cent of 900 patients receiving sulfadiazine.

2. There was no significant difference between the incidence of any individual toxic reactions in the two groups, with the exception that renal calculi were more frequent following the administration of sulfamerazine. Drug fever (with or without dermatitis and conjunctivitis) was also more frequent following sulfamerazine, although the difference was not statistically significant. When the patients were compared according to dosage or according to the average free sulfonamide levels reached in the blood, the aforementioned toxic reactions more frequently followed the administration of sulfamerazine than the administration of sulfadiazine.

3. Drug fever occurred more often during a second course of sulfamerazine than during a second course of sulfadiazine.

4. Sulfadiazine is the drug of choice for systemic sulfonamide therapy at the present time.

9. Gilligan, D. R.: Blood Levels of Sulfadiazine, Sulfamerazine and Sulfamethazine in Relation to Binding in the Plasma, J. Pharmacol. & Exper. Therap. **79:** 320-328 (Dec.) 1943.

10. Davis, B. D., and Wood, W. B., Jr.: Studies on Antibacterial Action of Sulfonamide Drugs: III. Correlation of Drug Activity with Binding to Plasma Proteins, Proc. Soc. Exper. Biol. & Med. **51:** 283, 1942.

THE EFFECT OF SULFADIAZINE ON THE COORDINATION AND REACTION TIME OF YOUNG MEN

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It is generally recommended that persons who receive sulfonamide therapy should not undertake work involving balance, perception or the operation of intricate machinery,[1] because of the hazard of the mental confusion,[2] interference with memory and judgment,[3] dizziness [4] and lassitude,[5] which are said to be common accompaniments of therapy.[6] There are indeed but few diseases besides gonorrhea and chancroid which justify sulfonamide therapy of ambulatory patients. However, recent studies [7] indicate that sulfonamide chemoprophylaxis may eventually be widely used for healthy persons to prevent threatened epidemics of meningococcic meningitis and perhaps for other contagious infections. Therefore, because of the frequency of the diseases mentioned, which occur largely in the age group most likely to be engaged in such types of work especially in driving land, water or air vehicles, it is of importance to learn what proportion of patients receiving sulfonamide compounds are so affected and to what extent.

There are few reports of controlled studies with human subjects. Roughton and his co-workers [8] reported studies of 6 subjects; of these only 3 were able to complete all the tests while taking sulfanilamide; the others developed nausea and vomiting and one a head cold. The subjects were given 2 to 3 Gm. of sulfanilamide daily and reacted in such a manner in the opinion of the authors that the use of sulfanilamide was unsuitable in those expected to continue exacting

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Cooperation was extended by Major E. J. Henry of the Pennsylvania State Police and by the Pennsylvania Chapter of the Red Cross Motor Corps.

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or strenuous work. In contrast they [9] found that sulfadiazine or sulfathiazole up to 4 Gm. in twenty-four hours given to 6 healthy young men resulted in no limitation in the normal activity or the ability to perform both moderate and exhausting work.

Reynolds and Shaffer,[10] who gave 4 to 5 Gm. of sulfathiazole or 4 Gm. of sulfadiazine over a twenty-four hour period, believed that a comparison of the controls and those receiving the drugs showed no differences in mental efficiency or hand-eye coordination by the test which they used. A few subjects receiving sulfathiazole had poorer averages, but this was interpreted as idiosyncrasy to the sulfathiazole. However, Reynolds and his co-workers [11] showed that small doses of sulfathiazole and sulfadiazine affected depth perception and muscle balance of the eyes and suggested the drugs be not used indiscriminately among those requiring maximum visual efficiency.

Because of the availability of special apparatus which closely resembled actual working conditions, the following studies were made:

METHODS

The two types of tests used were (1) steering and (2) vigilance. The steering test measures eye-hand coordination, while the vigilance test measures reaction time, alertness, coordination or the ability to perform several acts at one time.

Both tests were made by means of an apparatus of the type developed for determining the fitness of automobile drivers by Dr. H. R. DeSilva, formerly of the Harvard Bureau for Traffic Research and used by the Pennsylvania State Motor Bureau. The apparatus is constructed so that it resembles the driving compartment of an automobile with a driver's seat, a steering wheel, clutch and brake pedals, an accelerator and gear shifting lever. In its operation it simulates actual driving conditions under laboratory control.

STEERING (EYE-HAND COORDINATION)

First, the subject was obliged to "steer the car" and keep it alined with a small dot located in the center of a movable road scene realistically portrayed directly in front of the subject. The road scene moves from side to side in a slow, smooth but unpredictable motion. A pilot light is located on each side of the road scene in order to warn the subject when his car is off alinement. If, for example, the car is too far to the left, the left pilot light flashes on. The pilot lights are off when the car is properly alined. The margin of error is very slight, about ⅛ inch, thus making it possible to test a high degree of eye-hand coordination. Once started, the duration of the test is eighty seconds; the first twenty seconds is a practice period during which time the test score in seconds or percentage of one minute is automatically recorded on the dial of an electric clock. The actual test is recorded during the next sixty seconds. The clock records only the duration of time in which the automobile is "alined," and if "off the course" it does not register until proper alinement is resumed. At the end of eighty seconds the road scene automatically stops moving.

A score of 65 per cent is considered as normal or average. This means that a driver with a score of 65 per cent was able to keep his car properly alined for thirty-nine seconds, or 65 per cent of the one minute test. The higher the score the better the degree of coordination.

VIGILANCE (REACTION TIME AND COORDINATION)

This test measures alertness and ability to perform several acts at one time. The subject must shift gears and apply the brake as in actual driving in addition to steering, as described.

When the car has been "started in motion" by engaging the gears, the road scene begins to move from side to side as described. The operator must keep the car in proper alinement and watch a traffic light at the side of the road. The traffic light flashes green when pressure is applied to the accelerator. At an unpredictable moment the light suddenly turns red. At this signal the subject must instantly apply the brake and clutch pedals. On application of the brake, the road scene stops moving. The subject must then go through the procedure of shifting gears in order to make the road scene move again. This procedure is continued until the test is completed. The entire test again consists of a twenty second practice period and an actual test period of sixty seconds. The practice period includes one emergency stop, while the actual test contains four emergency stops.

An electric recording clock measures the reaction time in hundredths of a second. The reaction time is the period between the flash of the red light and pressure on the brake pedal. The steering score in this test is recorded by another electric clock as described for the steering test. Average scores for this test are as follows:

Brake reaction time, $^{75}/_{100}$ second. The shorter the time the quicker or better the reaction. For steering, 45 per cent is considered as normal or average score. The higher the score the better the coordination.

Tests were made on 134 medical students ranging in age from 22 to 34 years (average 24.5) and weighing from 125 to 210 pounds (57 to 94 Kg.), with an average weight of 162 pounds (73.5 Kg.). Ninety were given sulfadiazine, and 44 served as controls.

The steering and vigilance tests were made first on the group of 90 students before treatment. Sulfadiazine was then given by mouth in an initial dose of 2 Gm. and then 1 Gm. every four hours for eighteen doses: a total of 19 Gm. administered over seventy hours. At the end of this time the steering and vigilance tests were repeated on the same group. The amount of sulfadiazine in the blood was measured immediately after the test by the method of Bratton and Marshall [12] by means of a photoelectric colorimeter. One week later the tests of coordination and reaction time were repeated and the amount of sulfadiazine in the blood again measured.

Forty-four students who did not receive any sulfadiazine served as controls and took the same series of tests. Controls seemed necessary for the tests, since men in the treated group, once having passed through the preliminary test, became acquainted with the apparatus and showed a small degree of improvement when tested a second time.

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11. Reynolds, F. W.; Evans, M. S., and Walsh, F. B.: Chemotherapeutic Prophylaxis with Sulfonamide Drugs: I. The Effect of Small Doses of Sulfathiazole or Sulfadiazine on Visual Efficiency, Am. J. Syph., Gonor. & Ven. Dis. **27**: 2 (Jan.) 1943.

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RESULTS

The amount of sulfadiazine in the blood at the time of the test ranged from 5.4 to 16.6 mg. per hundred cubic centimeters of blood (average 9.5 mg.). This variation in absorption by the oral route is similar to that found by others. In no case was any sulfadiazine found in the blood specimen taken one week later.

The accompanying table shows the prevalence of symptoms and signs of toxicity. These were determined by questioning the subjects when they returned for their second series of tests, after having taken sulfadiazine for a period of seventy hours.

Statistically there were no significant differences between the reaction times or the hand-eye coordination tests of the 90 subjects receiving the sulfadiazine and the 44 controls. In no instance were the variations in any 1 individual's test of enough moment to be of significance. The results obtained by using a large number of subjects and a machine which more nearly approximates actual working conditions is in harmony with the findings of Roughton and his co-workers[9] and of Reynolds and Shaffer.[10] Any impairment of visual efficiency, as might be expected from the findings of Reynolds and his co-workers,[11] was not reflected in change great enough to affect the hand-eye coordination or the reaction time as determined by our tests.

Symptoms and Signs of Toxicity

Sense of fulness in head	30
Insomnia	15
Burning	11
Frequency	7
Rash	1
Drowsiness	3
Symptom free	38

It must be pointed out, however, that healthy students were used in the tests, and no information is at hand of the possible effects of a combination of some infectious disease and sulfonamide therapy, nor did any of the subjects used have an idiosyncrasy for the drug. It is also possible that readministration of sulfonamides in persons sensitized by previous medication may cause results different from those obtained. The results in the main show that in young men in good health the amount of sulfadiazine usually considered adequate for the treatment or prevention of certain infections caused no significant disturbance of reaction time or impairment of coordination and no evidence of any residual effects on coordination or reaction time when the tests were repeated seven days after the drug had been discontinued.

SUMMARY

Ninety healthy young men were given sulfadiazine by mouth. Two Gm. was the initial dose, and 1 Gm. was given every four hours for a total of 19 Gm. A special apparatus which simulated actual working conditions was used to measure the coordination and reaction time in persons who were given sulfadiazine and in those used as controls. Eye-hand coordination and reaction times were automatically recorded by an electric clock. Tests were made before the administration, during and seven days after the drug was discontinued. There was no significant difference between the controls and those subjects given sulfadiazine.

BROMIDE INTOXICATION FROM PROLONGED SELF MEDICATION WITH B. C. HEADACHE POWDER

REPORT OF TWO CASES

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For many years medical literature has included specific case reports of innocent and unintentional intoxication from drugs. Among the drugs most often incriminated in this respect are aminopyrine and its many compounds, producing agranulocytosis, the barbiturates, producing various toxic effects, particularly from overdosage, and the bromides, either alone or mixed with acetanilid.

There seems to be an increase in this type of intoxication caused, according to the Federal Trade Commission, by increased consumption of various agents designed to soothe the nerves of a population at war living in a scarcity of doctors.

It is only within recent years that certain proprietary medicines have been specifically incriminated in the production of hematologic, neurologic, psychiatric, dermatologic and other pathologic manifestations in the habitual user. Such agents have included Bromo-Seltzer,[1] Neurosine,[2] Pyramidon[3] and Sedormid.[4] This paper adds another popular self-medication agent, B. C. headache powder, to the list. Of especial interest in these 2 case reports are the neurologic, psychiatric and dermatologic findings presumably following chronic prolonged bromide intoxication, bromide being one of the effective agents in B. C. headache powder.

REPORT OF CASES

CASE 1.—*History.*—F. G., a white man aged 35, a carpenter, who was admitted to the Emory University Hospital on March 8 and discharged on March 27, 1943, and whose memory was fairly accurate up until March 8, was seen on that day to be stumbling aimlessly around the streets of his home town and was thought to be drunk. It was later established that he was not drunk and, as a matter of fact, did not use alcoholic beverages of any kind. After he was seen in this condition he was carried to a physician's office, where a presumptive diagnosis of drug intoxication was made, and he was admitted to the Emory University Hospital about thirty minutes later.

After hospitalization further history was obtained from his sister and his wife, as the patient responded only sluggishly and incoherently to interrogation. According to them the patient had been taking B. C. headache powders for the last fifteen years, taking from six to ten powders daily because of persistent "migraine" headaches. They further stated that he took no other drugs. During the last three years he had been having intermittent, prolonged, lethargic, somnolent episodes and had been unable to perform his carpentry activities with his usual steadfastness and skill. About two weeks before he had consulted his family physician, who by urinalysis alone made a diagnosis of diabetes mellitus and placed him on a diet with 18 units of protamine zinc insulin every morning,

Read before the staff of the Emory University Hospital in June 1943.
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3. Kracke, R. R., and Parker, F. P.: The Relationship of Drug Therapy to Agranulocytosis, J. A. M. A. **105**: 960 (Sept. 21) 1935.
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which regimen he had followed faithfully. (After several days' hospitalization associated with clearing of the mental sensorium, the patient confirmed this history.)

Physical Examination.—At the time of admission the patient, who was fairly well nourished, appeared lethargic and semistuporous. There was a moderate cyanosis of the peripheral skin and mucous membranes, especially the lips. The pupils were widely dilated and did not react to light or in accommodation. There was a slight ptosis of both upper eyelids. There were dental caries and pyorrhea associated with foul breath. Examination of the skin revealed considerable moisture, which was characterized by a foul, distinctive odor. In addition, there were many maculopapular copper colored eruptions over the neck, back and calf muscles. Some of these were ulcerated (fig. 1). The heart and lungs were normal. The temperature was 99.6 F., pulse rate 96 and blood pressure 138/38. Examination of the abdomen and external genitalia was negative.

Neurologic examination revealed that the patient did not know where he was or the day of the week. He could not add, subtract or divide simple figures but did know his name, though only after persistent questioning. The equilibratory senses were normal, although he did possess a slight staggering gait on walking across the room. Succession, rebound, skilled acts and movements were all sluggish and slightly confused. No definite aphasia or dysarthria was noted. However, a slight tremor of the lips and hands was perceptible. The muscle tone was good, with absence of any atrophy. There was also slight tenderness over the lesion around the right calf muscle area. Tactile, pain, temperature and position senses were normal. The deep pectoral, biceps, triceps and radial reflexes were very sluggish. The cranial nerves were normal. There was no evidence of any meningeal irritation.

Fig. 1.—Multiple maculopapular and pustular coppery colored bromide eruptions over right calf skin surface.

Laboratory Examination.—The blood sugar was 125 mg. per hundred cubic centimeters and on the following day 87 mg. per hundred cubic centimeters. The blood bromide (Wuth method) was 300 mg. per hundred cubic centimeters and the same on the following day. Spectroscopy of the blood for sulfhemoglobin and methemoglobin was negative. Red blood cells were 3,800,000 per cubic millimeter, hemoglobin 10.5 Gm. (68.2 per cent), white blood cells 14,500 per cubic millimeter, differential count: segmented neutrophils 88 per cent, lymphocytes 10 per cent, eosinophils 2 per cent. The platelet count was 310,000 per cubic millimeter. Urine examination was negative. On March 11 the reticulocyte count was 4.4 per cent, the blood bromide 200 mg. per hundred cubic centimeters and the blood chloride 82.5 mg. per hundred cubic centimeters of sodium chloride. The Kahn reaction was negative. On March 18 the blood bromide was 100 mg. per hundred cubic centimeters and chloride 338 mg. per hundred cubic centimeters of sodium chloride. The red blood cell count was 4,340,000 per cubic millimeter and hemoglobin 14 Gm. (91 per cent) (photolometer); the white blood cell count was 13,350 per cubic millimeter, segmenters 85 per cent, lymphocytes 14 per cent and monocytes 1 per cent. The reticulocyte count was 1.2 per cent and the sedimentation rate was 45 mm. in one hour by the Wintrobe tube method. X-ray examination of the chest showed a chronic bronchial reaction of both lower lobes with no evidence of tuberculosis. On March 22 the sputum was negative for acid fast bacilli and a qualitative bromide test on a twenty-four hour urine specimen was negative. On March 23 the blood bromide was 75 mg. per hundred cubic centimeters, the chloride 396 mg. per hundred cubic centimeters, the red blood cell count was 5,100,000 per cubic millimeter and the hemoglobin 14.4 Gm. (93.6 per cent). On April 1 the blood bromide was negative and blood chloride 511 mg. per hundred cubic centimeters.

Course and Treatment.—The patient remained in the hospital for nineteen days. During the first two days he showed evidence of disorientation with tardy response to questioning and tended to lapse into a somnolent state during interrogation. Treatment consisted of intravenous saline solution, large amounts of fluids by mouth and a 5 grain (0.32 Gm.) salt tablet by mouth every three hours for five days, and then 10 grains (0.65 Gm.) every two hours for the remainder of his hospital stay. The patient's mental and physical status gradually returned to normal. During this time he experienced no attacks of migraine. The blood bromide fell from 300 mg. to 75 mg. per hundred cubic centimeters and the blood chloride rose to 396 mg. per hundred cubic centimeters.

A punch biopsy of one of the pustular right calf lesions was done and revealed a moderate hyperkeratosis of the epidermis with prolongation of some of the rete pegs into the underlying corium. The latter shows a pronounced inflammatory granulomatous-like change in its upper part. This reaction was rather sharply limited and consisted chiefly of lymphocytic cell infiltrations with large numbers of eosinophils, plasma cells and lymphocytes. In addition there was a definite dilatation of the blood vessels in the corium, the lumens being engorged with leukocytes and the vessels showing proliferation of the endothelium and surrounding perivasculitis. The microscopic changes appeared consistent with those previously described as characteristic of bromoderma (fig. 2).

Six weeks after discharge from the hospital there was a negative blood bromide and blood chloride of 511 mg. per hundred cubic centimeters. The cyanosis of the skin and mucous membranes gradually disappeared. In the absence of methemoglobin the cause of this gross discoloration was never determined.

Case 2.—*History.*—M. F. T., a white man aged 43, a fireman, admitted in a semistuporous condition to Grady Hospital on Nov. 9, 1942 and discharged on November 21, for the past two months had been acting strangely. He had often been drowsy and difficult to awaken, often wandered about aimlessly, lost considerable weight and tended to prevaricate. Recently he had become even more lethargic, and his gait and movements had become ataxic. Several days before admission he was picked up by the police, who suspected drunkenness. At the time of entry it was difficult to arouse the patient. His replies to questions were erratic. According to his wife and relatives, he had been accustomed to take an occasional B. C. headache powder for relief of headache. About two months before the present episode he had a painful abscessed tooth but said he could not stop work to get treatment and therefore consumed as much as six packages of B. C. powder each day for one week. One day he was seen to have taken thirteen packages of B. C. headache powders and is known to have taken a great many since then for these recurrent "headache" troubles. No other history of drug consumption could be elicited.

Physical Examination.—The temperature was 98.6 F., the pulse rate 70, respiratory rate 18 and blood pressure 120/70. The patient was very somnolent, gave irrational answers, had definite muscular incoordination and was unable to give a satisfactory history. No skin eruptions were present. The ears, lips and mucous membranes showed a moderate degree of cyanosis. The neck was not rigid, and the pupils reacted to light and in accommodation. The conjunctivas were moderately injected. There was a purulent exudate at the inner canthus

of both eyes. Fundoscopy was also negative. The patient was edentulous, the tongue beefy red and the pharynx slightly reddened. Examination of the heart and lungs was essentially negative except for presence of an emphysematous chest associated with distant breath sounds, and occasional small bronchial rales. The heart sounds were distant, and there was a slight apical systolic murmur. The abdomen was obese, with no organs palpable. The extremities showed slight cyanosis of the nail beds with considerable ataxia and a coarse tremor. The reflexes were physiologic throughout but slightly hypoactive. The gag reflex was present but slightly diminished.

Laboratory Examination.—There was a cell count of 3,400,000 per cubic millimeter, hemoglobin 10 Gm. (Sahli), white blood cell count 6,600 per cubic millimeter, with segmented neutrophils 62 per cent, lymphocytes 36 per cent and monocytes 2 per cent. The urinalysis was negative. The sedimentation rate by the Wintrobe method was shown to be a 2 mm. fall in one hour. The blood sugar was 80 mg. per hundred cubic centimeters and the nonprotein nitrogen 30 mg. per hundred cubic centimeters. The blood bromide level was 500 Gm. per hundred cubic centimeters. Spectroscopy of the blood revealed no methemoglobin. Spinal fluid examination showed an initial pressure of 230 mm. of water but was associated with incomplete relaxation. The spinal fluid dynamics, cell count and protein were normal. Kahn tests on the spinal fluid and blood were negative.

Fig. 2.—Bromoderma, characterized by pronounced acute and chronic leukocytic cell infiltration in the corium—granulomatous in appearance—and associated with moderate proliferation of the endothelium and surrounding perivasculitis.

During the first few days the patient was completely disoriented, alternating between somnolence and excitement, talking incoherently, exhibiting muscular incoordination and general depression of cerebral activity. The sensorium was deeply disturbed. He had many hallucinations, both auditory and visual. It was necessary to have an attendant constantly present to prevent damage by the patient, who was totally irresponsible for his actions. During the latter days of his hospital stay he became alternately euphoric and rowdy and up to the sixth hospital day he could not solve simple addition or subtraction. On the seventh hospital day he stated that he felt better than he had felt in the last two years. The blood bromide level at this time was 150 mg. per hundred cubic centimeters by the Wuth method. His mental status was much improved. On the tenth hospital day he was practically well, i. e. had good muscular coordination, his mental state was back to normal and he appeared very much improved. The blood bromide level at this time was 100 mg. per hundred cubic centimeters and the blood chloride level was 551 mg. per hundred cubic centimeters as sodium chloride. He was discharged with advice to continue salt medication with fluids and rest.

COMMENT

Although bromide intoxication appears to be a fairly common condition, as may be surmised from reviewing the literature, many physicians still fail to recognize it. Bromidism may be seen in patients who either resort to self medication or who are given the drug by physicians. In either case there is a tendency to use the agent in increasing amounts over long periods of time, especially by the type of individual who exhibits what Alvarez has termed "constitutional inferiority" and who suffers from recurrences of either real or imaginary discomforts. During wartime we may expect an increase in the incidence of bromidism from both sources. The frequency of bromidism is a controversial question, but it ranks high among drug intoxications as observed in mental institutions.[5]

B. C. headache powder, the toxic agent in the 2 cases described here, contains the following ingredients in each powder: potassium bromide 7½ grains, acetanilid 2½ grains and acetylsalicylic acid and caffeine citrate in proportionate amounts not stated on the label. In most cases of bromidism certain findings are evident, these usually including partial delirium, mental retardation, slowed speech, ataxia, tremors of the hands and disturbances of attention and memory. Hallucinations may occur, but outspoken hallucinosis is rare. Paranoid delusions are not infrequent. Wallace and Brodie [6] have stated that, although bromides and chlorides are equally distributed in the extracellular spaces and soon reach a concentration in these areas corresponding to that in the blood stream, they are found in smaller amounts in the brain and cord tissue in relationship to chlorides. This may be one of the reasons, in addition to other factors, why it apparently requires varying quantities of bromides to produce central nervous system symptoms in different people. For example, Wagner and Bunbury [7] found that, of 1,000 consecutive persons admitted to the Colorado Psychopathic Hospital from 1928 to 1930, 7.7 per cent had an average bromide level of 75 mg. per hundred cubic centimeters, but only 4.4 per cent had mental symptoms. On the other hand, Wuth,[8] on examination of 238 admissions to Phipps Clinic, demonstrated 50 cases with varying levels of bromide concentration and of these 20 showed evidence

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8. Wuth, O.: Rational Bromide Treatment, J. A. M. A. **88**: 2013 (June 25) 1927.

of intoxication at 150 mg. per hundred cubic centimeters. The presence of a pustular acneform eruption may aid in the diagnosis but is more frequently absent than present. Indeed, Sherman and Arieff [9] found that acne frequently occurs in patients on bromide therapy regardless of the blood bromide level. In addition, they showed that those patients with previous acneic or seborrheic skin were found to be more prone to have an exacerbation of their skin lesions.

With such variations in blood bromide levels, it is difficult to understand why there is such a high incidence of intoxication in some patients and no evidence of it in others. It must be concluded that a number of factors other than the absolute dose of bromide are concerned in the development of bromide intoxication. For example, it has been shown by Barbour [10] that for every gram of bromide ingested from 10 to 15 grams of chloride should be taken. Therefore a reduction of chloride in the diet is found to be quite effective in increasing the blood bromide concentration on a constant bromide intake. Wuth [8] believes that intoxication begins at 25 per cent replacement of the blood chlorides and that 40 per cent replacement is fatal. Furthermore, kidney damage may by interfering with bromide excretion produce the same effect. In fact, Preu, Romano and Brown [11] stressed the dangers of giving bromide to patients with nephritis and arteriosclerosis. Then in addition it is generally accepted that the threshold of toxicity varies decidedly in different people, as it the case with alcohol. Gundry,[12] in attempting an explanation of these discrepancies, states that "there seems to be an idiosyncrasy on the part of certain people; that is, some have a complete symptom complex from low concentrations and others are entirely free of any symptoms with high concentrations of bromides in the blood." On the other hand, Moore and Gray,[13] after studying drugs as a factor in the production of mental disease, state that the most important factor seems to be the fundamental make-up of the patient and the permeability of his blood vessels. They state further that the patient's aim in using any drug is the same; that is, the drugs constitute devices for creating the illusions which are most desirable to individuals who cannot accept the realities of existence in the shape in which they must meet it.

This same point has been stressed by Angyal,[14] who made careful studies of 21 patients with a diagnosis of "psychosis due to bromides" at the Worcester State Hospital. In this group he found the average bromide blood level to be 201 mg. per hundred cubic centimeters. Among the mental symptoms, clouding of consciousness was the most constant finding, with hallucinations, delusions, fear and excitement in the order named. He studied particularly the underlying causes why these patients took bromides and found that 5 had advanced arteriosclerosis, 4 were severe alcoholic addicts, 1 had an old untreated syphilis, 1 had localized necrosis of the brain, 2 had physical debility and 4 were cases of involutional melancholia. He pointed out that many of them showed definite signs of psychosis prior to use of bromides and that the symptom complex seen in bromidism is probably at least partly caused by the underlying organic pathologic changes.

An interesting feature in both cases of B. C. headache powder poisoning is the pronounced clinical cyanosis but absence of demonstrable blood methemoglobin or sulfhemoglobin by spectroscopic methods. As stated before, each of these powders contains 2½ grains of acetanilid, and Lester [15] has shown that acetanilid given to human subjects in three doses of 0.5 Gm. each per day caused only a slight active rise in methemoglobin within the day but a pronounced rise when given in doses of 1.0 Gm. three times daily. He showed further that there was no cumulative formation of methemoglobin when 1, 2 and 3 Gm. daily were given for five weeks. From this it can be assumed that the 2 patients had not ingested enough acetanilid daily to cause a rise in blood methemoglobin or sulfhemoglobin to be detected by the usual spectroscopic procedure. Since there was no cardiac or pulmonary disease causing oxygen unsaturation of the blood in either of these 2 patients, it is possible but highly improbable that the bluish discoloration was due to some substance derived from acetanilid, perhaps an intermediate product in its breakdown but which is not detectable on spectroscopic examination. Also it is admitted that failure to find these substances might be attributed to faulty technic in spectroscopic examination.

The treatment of bromide intoxication centers around the often repeated principles of substitution and elimination. The first step is to insure the abrupt cessation of bromide intake with substitution of other sedatives when restlessness cannot be controlled by such physical therapeutic measures as packs and tub baths. The fluid intake should be increased and enforced. When this is not possible by oral administration, parenteral methods are advisable. One can also combine oral and parenteral therapy so that approximately 6 to 12 Gm. of sodium chloride is given daily. Strecker and Ebaugh [16] state that one should not institute displacement procedures too rapidly, since this process may take place more rapidly than does renal excretion with a subsequent resultant temporary rise in blood bromide concentration. As a possible aid in bromide elimination, Baumann, Sprinson and Marine [17] state that "thyroid administration brings about a lowering of blood bromide—probably due to the diuretic and stimulating action of thyroid on the kidney." The amount of bromide that can be removed through the bowels does not justify the drastic use of cathartics. Another method for bromide elimination is based on the fact that in the presence of a large amount of bromide in the tissue a considerable proportion of the gastric acidity is due to hydrobromic acid,[18] which normally is reabsorbed in the intestine. Through use of this principle, 5 Gm. of bromide was removed daily by Toenhart by repeated aspirations of the gastric contents for a period of six days from a patient with an initial blood bromide concentration of 300 mg. per hundred cubic centimeters, with clinical

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recovery in this period. As advocated by others, perhaps the Wangensteen continuous suction technic would probably be still more effective. Finally, Bondurant and Campbell [19] advocate the use of adrenal cortex extract in the treatment of bromide eruption and intoxication. This is based on the fundamental physiologic principles advanced by Loeb and his associates [20] and Harrop [21] that the regulatory effect on sodium and chloride metabolism is one of the functions of the adrenal cortex. Using this knowledge in the treatment of Addison's disease, Thorn,[22] Thompson [23] and Cutler [24] employed this extract to force a definite retention of sodium chloride. Since it is apparent that bromide is retained in the system at the expense of chlorides, Bondurant and Campbell [19] used a combination treatment of 10 Gm. of sodium chloride by mouth and 5 cc. of adrenal cortex extract intramuscularly daily. They found that in 10 patients with bromism (150-250 mg. blood bromide level) those who received chlorides alone without the extract required a longer period of treatment, and 2 of the 3 patients in this category developed edema of the feet and ankles near the end of the course, which was promptly relieved by sodium bicarbonate.

CONCLUSIONS

1. Two cases of bromidism, presumably arising from prolonged self administration with B. C. headache powders, were seen.

2. B. C. headache powder, which is a proprietary preparation sold indiscriminately throughout the United States and which contains 7½ grains of potassium bromide and 2½ grains of acetanilid per powder, is another dangerous source of bromide intoxication.

3. Increasing numbers of cases of bromide intoxication are to be expected with increasing self medication, caused by the present depletion of civilian physicians.

4. The symptoms and signs of bromide intoxication should become more familiar to all physicians, who should be on the alert for this symptom complex.

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Hospitals in Europe in the Eighteenth Century.—The older hospitals of Europe had their origin in religious foundations, and their functions differed essentially from those of today. They were not medical but ecclesiastical. They were for the care rather than the cure of their inmates. Excluding monasteries and friaries there were more than 750 charitable institutions in medieval England. It was from some of these that the oldest of present day hospitals grew, but there were others that retained their original characters as homes for the aged and infirm. Of the former type is the great hospital of St. Bartholomew in the city of London, while a good example of the latter kind is the hospital of St. Cross, near Winchester. —Haagensen, C. D., and Lloyd, Wyndham E. B.: A Hundred Years of Medicine, New York, Sheridan House, Inc., 1943.

THE USE OF ERGOTAMINE TARTRATE AS A REMEDY FOR "BATTLE REACTION"

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This paper is a preliminary report of treatment of acute reaction to battle experience with ergotamine tartrate. In our observation of merchant seamen at the Gladstone, N. J., Rest Center we became much interested in the fact that the symptoms shown in certain cases of so-called traumatic war neurosis reflect a clear-cut picture of autonomic nervous system imbalance with sympathetic preponderance. This preliminary report is published so that others working with these cases may try out the ideas and carry them further. Our work is continuing, and more complete reports will be published later.

In this group we included only those whose adjustment had been satisfactory until subjected to a battle experience which proved overwhelming. Most had faced previous action with only normal transient anxiety. The reaction is outstandingly a physiologic one, really an exaggerated expression of fear of a real situation, not apparently complicated by the psychologic mechanisms usually associated with the term neurosis. In the treatment an effort is made to relieve the physiologic symptoms. There is then more opportunity to give help in other aspects of the picture.

The patients in this category almost universally state that they would be all right if only they could "get a hold of" themselves. They complain of jitteriness, tremor, an empty feeling in the stomach, no appetite, pounding heart, thumping in the head, excessive perspiration and insomnia. The symptoms are confirmed on examination.

The original threat to life results in a definitely increased production of epinephrine, which causes the physical symptoms and produces an increased irritability to stimuli.[1] Mild stimuli result in still more production of epinephrine, and the symptoms themselves increase fear so that both internal and external stimuli are active and produce a cycle.

In the war cases there is purely an exaggeration of the normal reaction of the sympathetic nervous system to fear. In a true neurosis there is apt to be a complicated and unpredictable pattern of autonomic imbalance.

Because of this clear-cut difference between the reactions to war incidents and the true neuroses, it is proposed that this syndrome be called battle reaction.

The direct and specific effect of emotions on the autonomic system is well known. Wolf and Wolff [2] made interesting observations on a patient with a gastric fistula. Resentment and aggression brought about parasympathetic activity, which was shown by

From the Medical Division, War Shipping Administration and United Seamen's Service.

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hyperemia of the gastric mucosa, increased glandular secretion and motor activity. Fear produced pallor of the mucosa, decreased motility and glandular secretion characteristic of predominantly sympathetic activity. As has been implied, the battle reaction is the continuation of the fear response to the initial traumatic experience.

We will not review the literature on pathology and treatment of this condition in this preliminary report. To date two of the main attacks on the problem have been a combination of recall of the original episode with all its concomitant fear, through the use of a barbiturate or hypnosis, and sleep, usually prolonged by barbiturates. Pentothal and sodium amytal narcosis have been recommended and have been successfully employed. However, in a certain number of cases in spite of repeated reviewing of the traumatic experience and other phases of the Rest Center program there has been no diminution of symptoms.

In view of the fact that the symptoms were so clearcut and so obviously due to sympathetic dysfunction, it was thought that a trial with drugs acting directly on the autonomic nervous system was indicated. Two possibilities were open:

1. To increase the action of the parasympathetic nervous system and therefore balance the overaction of the sympathetic by the use of doryl [3] (carbaminoylcholine) and mecholyl [4] (acetyl-beta-methycholine bromide).

2. To neutralize the action of the sympathetic by the use of ergotamine tartrate [5]—an inhibitor to that system.

EXPERIMENTAL APPROACH

All these drugs were tried out separately on 7 normal persons to determine which best combated the symptoms produced by the injection of 1 cc. of epinephrine 1:1,000 solution. Epinephrine most closely resembles sympathin, which is the humoral transmitting agent liberated during sympathetic overactivity which occurs as a reaction to fear. It was not possible to make a direct experimental approach under our conditions. The action of epinephrine being rapid and transitory, it was necessary to give first the slower acting drugs ergotamine, doryl and mecholyl, and then at the height of the reaction to give the epinephrine and note whether the reaction to epinephrine was prevented or effected.

Two mg. of doryl was given by mouth, and at the height of the parasympathetic reaction the epinephrine was injected. (Subjective symptoms and pulse and blood pressure were noted throughout the experiment.) On the following day 250 mg. of mecholyl was given, followed by epinephrine, under as nearly constant conditions as possible. On the third day 4 mg. of ergotamine tartrate was given and also followed by epinephrine. The ergotamine tartrate proved most efficacious in reducing the reaction to epinephrine.

TREATMENT OF PATIENTS

Three patients showing typical battle reactions were given 250 mg. of mecholyl three times a day for ten days with no results.

Five patients were given 2 mg. of doryl for ten days with slight improvement, which might have been due to other Rest Center factors.

Ergotamine tartrate was given to 20 patients classified as having battle reactions. Usually it was given orally, 3 mg. for the first dose, then 2 mg. every three hours for ten days. In 3 cases in which symptoms had subsided after two to three days the drug was stopped. Symptoms returned but again subsided with continuation of the drug. After continuing therapy seven days more, the gain was held.

A further control of the effect of suggestion was possible. Many patients before arrival had received ½ grain (0.032 Gm.) of phenobarbital tablets. Because of the close resemblance between the ergotamine tablet and phenobarbital, they felt that the same medication was being continued. Before long they reported a difference, stating that they were calmer, stronger, more at ease and had improved appetites while taking ergotamine.

Ergotamine was administered to 20 psychoneurotic patients, many mildly colored by war experience, with negative results. This observation is in accord with the reports of others. It is important to note that the civilian neuroses do not manifest themselves with such clearcut sympathetic preponderance as do the true war cases.

Careful watch is constantly kept for early untoward reactions (tingling and numbness) that we felt might develop from the relatively large doses used. Thus far there have been none. Patients suspected of hepatic insufficiency are not treated with ergotamine because of recent experimental data suggesting that the drug is broken down by the liver.[6] Other contraindications are advanced arteriosclerosis and certain peripheral vascular diseases.

As far as we were able to observe, the taking of ergotamine did not interfere with motor coordination or slow down mental processes. Its use, therefore, as a prophylactic to lessen excessive anxiety in combat might be considered.

REPORT OF CASES

The following typical cases indicate the procedures and results:

CASE 1.—A third mate aged 28 developed a severe battle reaction following a twenty-five minute running battle with two submarines. His ship was unarmed, and the Germans were raking the decks with antiaircraft fragmentation shells. A large part of the crew was killed, and he narrowly escaped with a few minor shrapnel wounds.

Each time he thought of this action, an uncomfortable feeling developed in the pit of his stomach, followed by an intense fear reaction and then varying degrees of amnesia. As he gave his history he went through this cycle. Relief followed the administration of 0.5 mg. of ergotamine hypodermically. After that he was able to discuss the event freely with only slight anxiety. He was continued on ergotamine by mouth for the usual period. Confidence returned rapidly as he found the incident could be discussed without anxiety and remained after the drug was discontinued. He was able to witness a movie of a torpedoing with little concern, whereas before

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treatment it produced panic. On discharge he confidently returned to sea duty.

CASE 2.—A patient developed battle reaction after many bombings sustained while shipping between Alexandria and Malta. He became "frozen" with fear and later developed a fullblown reaction with coarse tremors of his entire body. He was hospitalized in Africa and later in England before arriving in the United States. Despite the lapse of almost a year, he felt that he was almost as disturbed as at first. After two days on ergotamine, tension was considerably lessened and appetite improved. He stated that he felt better than at any time since the bombing. When medication was stopped after three days, the symptoms returned. It was then continued for five days more, again with improvement, which this time he maintained. He now is employed ashore and desires to return to sea. Though the symptoms are gone, it was not considered wise to send him back to sea because of the length of time he had the reaction before treatment and its severity.

CASE 3.—This offers an opportunity to compare two methods of treatment. A second cook aged 33 first entered the Rest Center in January 1943 suffering from intense anxiety with tremors, stammering speech, anorexia and insomnia resulting from a torpedoing and bombing attack. He was treated with sodium amytal (intravenously) and hypnosuggestion, as well as psychotherapy, and improved sufficently to leave in six weeks. He returned to sea and carried on quite well until October 1943, when the convoy in which he was sailing underwent attack by a submarine wolf pack. The battle continued for five days. Many ships were sunk nearby before his was torpedoed. Just before his was hit the next in line was struck in the powder magazine, and all hands were lost. Throughout the battle the patient bore up well, but almost immediately on coming ashore all the symptoms shown on his first admission returned with increased severity. He was placed on ergotamine and in two days had quieted considerably. Speaking was much easier. On the third day the drug was stopped and symptoms returned. It was then resumed for five days, after which the patient managed to hold his gain. The convalescence period was two and a half weeks, in contrast to the six weeks of his previous admission, and he stated on discharge that he felt better than at any time since the first torpedoing. He is back at sea. Follow-up reports indicate that he remains well.

COMMENT

From the basis of this admittedly limited experience, it is felt that ergotamine tartrate is of some value in combating the sympathetic overactivity associated with fear in the reactions to battle. It serves as a valuable adjunct to psychotherapy because the patient in discussing his experience and future adjustments without the intense sympathetic reaction regains his self confidence, which in turn raises his threshold of resistance to fear, making him able to meet again the trials of life. With the patient fortified against the fear reaction, stronger and more direct methods can be used to desensitize him.

SUMMARY

The term battle reaction is suggested in place of traumatic war neurosis as being more accurate. In this category are grouped only cases in which the previous adjustment had been apparently normal. The reaction is regarded primarily as a physiologic disturbance, the result of inordinate fear causing pronounced sympathetic nervous system overactivity.

A cycle is established as a result of this autonomic imbalance. Physiologic changes primarily and, to a lesser degree, superficial psychologic mechanisms lower the patient's threshold to fear, causing the reaction to intensify and persist.

Autonomic drugs, it was felt, might more directly break up this cycle than sedatives. Ergotamine, a sympatholytic drug, together with the special environment of the Rest Center, seems superior to parasympathomimetic agents in the same environment. It has been given to 20 patients with "battle reaction" with what seemed to be convincing results. Many uncontrollable factors in the Rest Centers make rigid evaluation of any one phase of treatment difficult. It is more important to get the man well by all the means available than to set up a rigidly controlled experiment.

Ergotamine tartrate was ineffective in the treatment of ordinary psychoneurosis.

It is hoped that physicians working with similar types of patients will continue the experimentation.

MENTAL CHANGES IN PATIENTS WITH SUBDURAL HEMATOMA

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Mental changes in most patients with acute and with chronic subdural hematomas can be demonstrated by careful clinical and psychologic testing. Too often patients are discharged from hospitals as completely cured when they still have demonstrable mental disturbances which remain unrecognized because of inadequate neuropsychiatric examination. Goldstein,[1] Ruesch and Moore,[2] Schilder,[3] Harrower-Erickson,[4] Benton and Howell.[5] Abbott, Due and Nosik[6] and others[7] studying head injuries found such impairment by different testing procedures. It has been shown that patients with cerebral lesions resulting from injury may have specific defects in their mental capacities which are not apparent from their general behavior and which can be elicited only by careful clinical and psychologic testing.

MATERIAL

With this in view we studied the last 50 cases of surgically proved subdural hematoma among persons admitted during the past year to the psychiatric division

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of Bellevue Hospital. During this period approximately 1,000 patients with severe head injury were admitted to the neurosurgical ward. Our patients were followed for at least three months. It is well known from other large statistical studies that contusion and laceration of the brain are commonly found together and may be associated with subdural hematoma. It is therefore difficult to evaluate the signs and symptoms of hematoma, isolated from the associated complications due to the related brain injury.

1. The patients ranged in age from 20 to 75. Most were in the fourth to the sixth decade. The group included 45 men and 5 women.

2. Alcoholism was a common complication, 19 being daily heavy drinkers, 19 periodic heavy drinkers, 4 daily moderate drinkers, 6 occasional drinkers and 2 nondrinkers.

3. Neurosurgically, all patients had bilateral trephine explorations.[8] Fifty hematomas were found at operation, 46 acute and 4 chronic, varying in size from 10 to 350 cc. Thirty-two were unilateral and 18 bilateral. As to type, 43 were hematomas and 7 hygromas. Both subdural and epidural hematomas were present in 3 patients.

PREOPERATIVE FINDINGS

A. *Psychiatric Data.*—1. Changes in the state of consciousness included progressive loss of consciousness in 26 patients and loss of consciousness with one or more "lucid" intervals in 24. Convulsions occurred in 13.

2. As to the sensorium, continuous confusion in 33, confusion with interspaced clearing in 12 and continuous coma (not possible to test the sensorium) in 5.

3. The mood was (*a*) dull, apathetic and sluggish in 28, (*b*) irritable, antagonistic, uncooperative and assaultive in 11, (*c*) euphoric in 3, (*d*) a combination of *a* and *b* in 2, (*e*) depressed in 1 and (*f*) continuous coma (mood change therefore not elicited) in 5.

4. Thinking disorders (special preoccupations) were present as a reduction in mentation in 32, aphasia in 6, hallucinations (chiefly visual) in 5, delirium in 4 and delusions (due chiefly to sensory misinterpretations) in 4.

Much emphasis has been focused on the alterations of consciousness in subdural hematoma. We have been impressed with the need for a clearer terminology to be used to describe these alterations, so that different examiners and different clinics will talk the same language. With this purpose in mind, we devised a form on which was charted the state of awareness of the patient. This recorded the level of the patient's state of consciousness over each twenty-four hour period. We recorded three levels of deficit, namely drowsy, stuporous and comatose. This rough charting is helpful in evaluating the clinical course. More recently we have adopted the formulations suggested by Cobb,[9] who described states of coma, semicoma, stupor and confusion dependent on the scoring of definitely measurable entities such as (1) elementary reflexes, (2) higher reflexes partly controlled by voluntary action, (3) verbal or written statements which indicate the degree of awareness and (4) examination of intellectual functions. Based on a series of eighteen tests covering these data, one can more accurately delimit a clearer definition of states of loss of consciousness. We have found this formulation useful. Cobb summarized his findings, with which we agree, as follows:

Coma is a state of complete unresponsiveness to the environment. The patient's reactions are limited to elemental reflexes, and even some of these are impaired. Semicoma is a condition in which there is responsiveness to some of the elemental mental functions, such as calls by name, reaction to noise and reaction to a visual threat. There is no significant defect in the elemental reflexes. Stupor is a condition of greater awareness in which the patient has no defect in elemental reflexes, responds to elemental mental functions and, in addition, reacts to verbal commands, having an ability to execute simple orders, such as shutting the eyes and sticking out the tongue. Confusion is a state in which there is only a mild disturbance in the state of consciousness. The elemental reflexes, elemental mental functions and reactions to simple commands are usually intact. These patients present chiefly difficulties in orientation.

1. It appears from our data on the state of consciousness that progressively deepening coma occurred as frequently as did the so-called lucid interval. The history of a "lucid" interval is of much help in diagnosing subdural hematoma, but its absence does not rule out this condition.

2. Progressive confusion occurred in two thirds of our patients. One third had confusion with interspaced periods of clear sensorium. There were 24 patients who had interval periods of return of consciousness; only 12 of these had clear sensorium during this period. We want to stress the fact that the so-called lucid intervals were not always lucid. It commonly is an interval when the patient is alert and conscious but not clear in his sensorium. We therefore suggest that the term "interval of return of consciousness" describes more accurately such clinical findings. During this period of return of consciousness the patient may be clear or clouded in his sensorium.

3. The mood changes were striking. Emotional dullness, apathy or sluggishness was by far the commonest finding. This emotional state was closely related to alterations in consciousness and sensorium. The patient was inattentive to his environment and did not respond to stimuli which commonly evoke emotional responses, stimuli such as wife, children, a pretty nurse, demands of bowels or bladder and hunger. Likewise the spontaneous emotional activity was greatly reduced. Most patients would lie quietly in bed in a state of apathetic indifference. A clearcut depression or euphoria was exceptional.

One fourth of our patients reacted with irritability, antagonism, uncooperativeness and assaultiveness. These symptoms were found frequently associated with convulsive seizures or with mild confusion without deep clouding of consciousness or occasionally with delirium. We realize that most of our patients were alcoholic addicts, and this factor undoubtedly colors the individual's reactions. However, alcoholism is not an uncommon contributory factor in many patients with head injuries.

4. The thinking processes showed a manifestation that can best be described as a general reduction or constriction of the thought processes. Most patients were quiet; they rarely spoke spontaneously, and when questioned their responses were delayed, meager and

8. The operative work on these patients was done by Dr. Hippolyte Wertheim, attending surgeon, Third Surgical Division, Bellevue Hospital, New York.

9. Cobb, S.: State of Consciousness, read before the meeting of the American Neurological Society, 1942.

incomplete. Patients must be continually provoked to answer simple questions. Thinking was painfully slow and required great effort.

In 6 patients there was definite evidence of aphasia and they all had left-sided hematomas.

It is noteworthy that hallucinatory experiences and delusions were uncommon. When present, the hallucinations were chiefly visual and usually consisted of seeing people. The delusional ideas were mostly based on misinterpretations and confabulations. Delirium was present in only 4 patients. This is interesting in view of the large number of patients who were under the influence of alcohol.

B. *Neurologic Data.*—The color of the spinal fluid was bloody in 30, xanthochromic in 14, clear in 4, and tap was not done in 2. The spinal fluid pressure varied from 80 to 420 mm. of cerebrospinal fluid. We found no direct relationship between spinal fluid pressure and alterations of consciousness. Half our patients had cerebrospinal fluid pressure above 200 mm., and half were below 200 mm. of cerebrospinal fluid pressure.

With regard to neurologic signs, examination of the cranial nerves revealed the pupils dilated on the same side as the hematoma in 21, the pupils dilated on the side opposite to the hematoma in 17 and the pupils equal in 12. Mild papilledema was present in only 5 patients. As to motor power, 24 had hemiparesis, hemiplegia or monoplegia. The hematoma was on the same side in 7, the hematoma was on the opposite side in 14 and bilateral hematomas were found in 3. Two patients had quadriparesis; 1 of them had a bilateral hematoma and the other a unilateral hematoma. Eighteen patients had bilateral hematomas. Of these 9 had normal or equivocal plantar reflexes, 5 had unilateral Babinski signs and 4 had bilateral Babinski signs. Thirty-two patients had unilateral hematomas. In this group 10 had normal or equivocal plantar reflexes, 16 had unilateral Babinski signs, of which 9 were on the same side as the hematoma and 7 were on the side opposite to the hematoma, and 6 had bilateral Babinski signs.

The abdominal reflexes were absent in three fifths of our patients. The sensory status could not be accurately evaluated because of the mental clouding present in most of our patients. Aphasia was present in 6 patients; all had left sided hematomas; 2 of these had, in addition, hematomas on the right side. Twenty-two patients had no skull fracture. Of these, 7 had bilateral hematomas and 15 had unilateral hematomas. Twenty-eight patients had skull fractures; of these, 10 had hematomas under the site of fracture, 10 had bilateral hematomas, 6 had hematomas on the side opposite to the fracture and 2 had fractures on both sides of the skull; 1 of the latter had bilateral hematomas. Air studies were deemed necessary to help localize the hematoma in 12 of our patients, and in 2 of these bilateral hematomas were found at operation but not revealed by the air encephalogram. Electroencephalograms were requested to help in the localization of hematomas in 8 patients. We found it diagnostically accurate in 4 instances.

The pupillary sign, often cited as diagnostic, was helpful in localizing the hematoma in less than half of our cases.

The neurologic data demonstrate that the Babinski sign and the changes in abdominal reflexes are in themselves poor hematoma-localizing signs. It is therefore important to do bilateral trephines for all patients suspected of subdural hematoma.

There was shifting of the neurologic signs, chiefly reflex and pupillary changes, from side to side in 45 of our 50 cases. This usually occurred early in the course of the illness.

Progression of signs occurred in 43 patients.

POSTOPERATIVE RESULTS

Twenty patients died. This large number of deaths is partly explained by the fact that many had other complicating injuries and many were in poor condition because of their alcoholism.

Postoperative psychiatric findings were of special interest. Normal or but slight change in psychiatric status was observed in 14 patients. These persons were well enough to return to work. They had amnesia for their injury and for the immediate preoperative and postoperative periods. Some had slight emotional dulness. All in this group were correctly oriented, and their memory, behavior and judgment were normal.

Aphasia was a residual finding in 4 patients, and this aphasic defect persisted for at least three months.

Mood disturbance was pronounced in 6 patients. Four of these had euphoria, 1 was depressed and 1 had a persistent chronic excitement. Some of the recovered patients had mild alteration of mood, which was chiefly emotional dulness, but this was not sufficiently outstanding to impair recovery and return to useful employment.

Paranoid trends as a residual disturbance occurred in only 1 patient.

Some degree of post-traumatic mental change was noted in 15 patients. Four of these were mentioned in the aphasic group; 6 had mood disturbances which colored the intellectual performance, and 5 showed chiefly amnestic defects. In the amnestic group confabulations were prominent and there was impairment in orientation and memory. Emotionally these patients were dull and slow to react. When given specific test situations they fatigued easily, could not focus their attention and, as a result, did badly. They were emotionally disturbed by their inadequacies, which were brought to focus by these tests, and this further impaired their capabilities. The physician may be easily deceived by casual observation of such patients, because they avoid complex situations and their defects therefore do not become apparent.

Psychologic testing in some of our cases showed that: 1. There is disturbance in gestalt perception; an inability to distinguish figure from background so that misinterpretations and judgment defects occur. 2. There is a striking discrepancy between the poor showing in abstract thinking as contrasted with their ability in concrete performance. The best preserved functions are those related to vocabulary, general information and rote memory. 3. Rorschach tests confirm the clinical findings of a definite reduction of the patient's capacity to appreciate total concepts as indicated by the reduction in the number of responses.

SUMMARY AND CONCLUSIONS

Preoperative and postoperative neuropsychiatric observations were made in 50 proved cases of subdural hematoma. The following facts emerged:

1. Some mental disturbances, varying in degree from slight to severe, occurred in all patients with acute subdural hematomas.

2. The mental disturbance in patients with acute subdural hematoma is the most striking neuropsychiatric observation. Some patients with minimal neurologic disturbances often have severe mental disturbances.

3. Progression of neuropsychiatric signs is the most important diagnostic feature of acute subdural hematoma.

4. The so-called lucid intervals commonly described in textbooks were found in only half of our group. An equal number of patients go into progressive coma. The term "lucid interval" used in this relation is often incorrect. The intervals would be more accurately designated periods of return of consciousness. Half the patients who have such a period of return of consciousness are not lucid at the time but have an impaired sensorium.

5. Delirium is an uncommon occurrence in subdural hematoma. When delirium occurs as an isolated symptom it is more often related, in our experience, to other types of head injury.

6. All patients who showed a confabulatory amnestic picture had in addition to their subdural hematoma bloody or xanthochromic spinal fluid.

7. Our postoperative results were as follows: Twenty patients died; 14 were returned to normal or had only slight disturbance that was not enough to impair their ability to return to their usual work; 1 had paranoid delusions that persisted for three months. Some degree of post-traumatic mental change was noted in 15 patients; 4 of these were aphasic three months after operation, 6 had mood disturbances sufficiently severe to impair severely their behavior and 5 showed amnestic defects.

8. The chief defect in the group with mental changes postoperatively was found on psychologic testing to show a disturbance of abstract thinking, with a relatively good preservation of concrete thinking. There is a striking reduction in spontaneous ideation. There are also disturbances in perception of gestalts and outstanding alteration in the mood. Similar neuropsychiatric changes have been described following other types of head injury.

9. Every patient who has had a subdural hematoma removed should have a detailed neuropsychiatric examination, including psychologic testing. One often finds defects that are not apparent on cursory examination.

Thirtieth Street and First Avenue.

Organic and Functional Approach to Rehabilitation.—Confusion has arisen between the organic and functional approach to rehabilitation. Under the guise of practicality, some workers in this field have laid the major stress on physical factors and reactions. Their viewpoint may imply that the rehabilitation of a person incapacitated by defective hearing, for example, might well begin and end in such a corrective measure as a mechanical hearing aid. On the other hand, those who approach rehabilitation from a dynamic functional viewpoint lay fundamental stress on the feeling life of the individual and study the psychological content of the problem. An electric method in which the correction of physical defect, when feasible, is supplemented by a study of the psychic effects provides the modern modus operandi.—Davis, John E.: Principles and Practice of Rehabilitation, New York, A. S. Barnes & Co., Inc., 1943.

PENTOTHAL SODIUM SLOUGH

PREVENTION BY PROCAINE HYDROCHLORIDE

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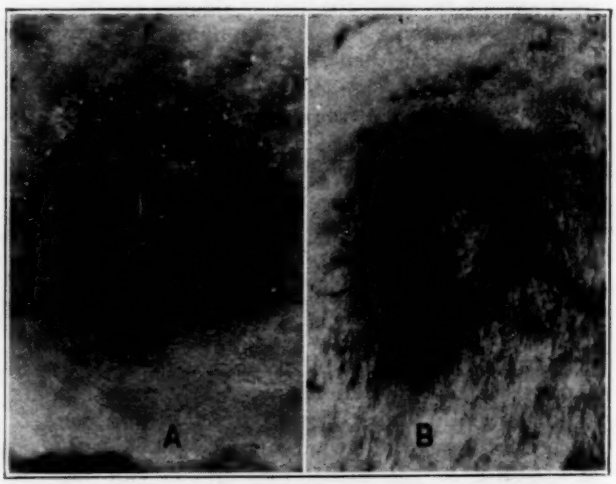
The propensity of pentothal sodium (thiopentobarbital) to cause violent tissue reactions if injected subcutaneously is well known. The severity of such reactions varies from a simple fibrous thickening about the site of injection to malignant sloughing requiring many months to heal. Both extremes have been clinically observed in patients.

It seemed profitable to attempt to find some method of preventing these complications. Ideally extravascular extravasation should not occur, but unfortunately it does happen.

Experimental procedures and results are described which strongly suggest that tissue reactions resulting from subcutaneous extravasation of pentothal solution can be prevented.



A, typical early slough formation (forty-eight hours) following injection of 5 per cent pentothal sodium; *B*, area injected with 5 per cent pentothal sodium and 1 per cent procaine hydrochloride, showing absence of tissue reaction and regrowth of hair (seven days after injection).

EXPERIMENTAL PROCEDURES

Rabbits were chosen as suitable experimental animals. The skin of the back was shaved and aseptically prepared, and the areas were injected with 5 cc. of a freshly prepared sterile aqueous solution of pentothal sodium. Three dilutions were employed: 2.5 per cent, 5 per cent and 10 per cent solutions. Paired injections were made with each dilution tested. Into one of each of the paired sites 5 cc. of a solution of 1 per cent procaine hydrochloride in isotonic solution of sodium chloride was immediately infiltrated. Care was taken to distribute the procaine throughout the "injection tumor" and to deposit it about the periphery as well.

At the site of all injections of pentothal sodium not infiltrated with procaine, tissue reactions were observed. The milder grades of reaction resulted from the presence of 2.5 per cent solution in the tissue. The reactions consisted of mild redness of the skin with local thickening. More severe reactions were noted at the sites of injection of 5 per cent solution. The most severe reactions were characterized by an early zone

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of demarcation and subsequent slough. The latter reactions occurred as a result of injections of 10 per cent solution. The control sites of injections of pentothal sodium which had been infiltrated with procaine hydrochloride universally failed to show any degree of tissue reaction. The skin of these areas so treated stood out in sharp contrast. The velvet texture of the normal rabbit skin was retained, and shaved areas rapidly exhibited growth of hair.

Twelve rabbits were given injections, and a total of sixteen injections performed as described. All animals were observed for a sufficiently long period to insure against delayed tissue reactions being missed. None were observed.

THEORETICAL CONSIDERATIONS

Tissue reaction in response to subcutaneous injection of pentothal sodium may be due to several causes. The explanation of the fact that procaine hydrochloride nullifies the irritant action of pentothal sodium is not clear.

Primarily, pentothal sodium is probably irritant by virtue of its alkalinity in aqueous solution. The p_H of such a solution is 9.0 or greater, while the p_H of 1 per cent procaine solution in isotonic solution of sodium chloride is 6.23.[1] It seems possible that neutralization occurs between the alkaline and acid solutions. However, procaine hydrochloride is known to break down in tissue fluid, with liberation of free base.[2] This fact tends to refute the neutralization hypothesis.

Prevention of irritation might also be explained by the fact that the addition of procaine in approximately equal quantities constitutes simple dilution of pentothal sodium in the tissues. However, it will be recalled that reactions with pentothal sodium alone occurred in response to solutions of 2.5 per cent.

Immediate tissue ischemia has been noted clinically about the site of extravasated pentothal sodium. The area of blanching seemed to extend far beyond the "injection tumor." It seems logical to conclude that local vasospasm can and does occur as a result of pentothal irritation. This may constitute the first step in a vicious circle terminating in death of the tissue.

If it is true that local vasospasm is a factor, it is also probable that the beneficial action of procaine is directly a result of local vasodilatation.

The precise explanation of this phenomenon is possibly of only academic interest. The clinical application of results seems to be of more practical importance.

POSSIBILITIES OF CLINICAL APPLICATION

Opportunity to check the experimental results in patients has not been afforded. It is suggested on the basis of observation of tissue reactions that anesthetic solutions of pentothal sodium be employed in dilutions of 2 per cent or less. Although extreme care is exercised, extravascular injection seems to occur. If such a complication should occur during the administration of a 2 per cent solution of pentothal sodium, the resultant tissue reaction is certain to be less than would occur as a result of leakage of stronger solutions.

It is recommended that, if such extravasations occur, the area be immediately infiltrated with 1 per cent solution of procaine hydrochloride. In addition, it seems important literally to surround the area with a "moat" of procaine solution.

1. Merck & Company, Inc., Rahway, N. J.: Personal communication to the authors.
2. Goodman, L., and Gilman, A.: The Pharmacological Basis of Therapeutics, New York, Macmillan Company, 1941, p. 289.

The possibility exists that the favorable reaction of procaine in preventing tissue necrosis might be extended to apply as well in other solutions that are accidentally extravasated during intravenous medication, e. g. arsenical compounds, diodrast, vein sclerosing solutions and others.

The application of moist heat has long been a useful method of producing vasodilatation and reactive hyperemia. It should not be neglected as an adjunct in the treatment of this complication.

SUMMARY AND CONCLUSIONS

1. Subcutaneous injections of 2.5, 5 and 10 per cent solutions of pentothal sodium result in reactive and destructive tissue lesions in the skin of rabbits.
2. Immediate infiltration of areas injected with pentothal sodium with 1 per cent solution of procaine hydrochloride in isotonic solution of sodium chloride effectively prevents tissue damage in the rabbit.
3. Precise explanation of the prevention of tissue reaction by procaine is not understood. The logical explanation seems to lie in its vasodilating properties.
4. Pentothal sodium should not be employed in dilutions exceeding 2 per cent.
5. Areas of extravasation resulting from extravascular injection of pentothal sodium should be immediately infiltrated with 1 per cent solution of procaine hydrochloride in isotonic solution of sodium chloride.
6. A moderate degree of heat should be applied to the entire extremity involved in order to prolong vasodilatation for at least the first twenty-four hours.

Clinical Notes, Suggestions and New Instruments

COMPLETE TRANSVERSE CERVICAL MYELITIS CAUSED BY TRAUMATIC HERNIATION OF AN OSSIFIED NUCLEUS PULPOSUS

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Cervical herniation of the nucleus pulposus is not rare. Stookey,[1] Love and Walsh,[2] Mixter[3] and many others have written extensively on this abnormality. However, rupture of the annulus fibrosus and protrusion of an ossified intervertebral disk causing complete transverse myelitis in the cervical region is rare.

Horwitz[4] in 1940 showed that degenerative changes in the cervical intervertebral substance occurred in 76 per cent of 50 unselected male cadavers examined by both roentgenograms and careful dissection. The average age at death was 56 years (the age of the subject of the present report) and the range was from 46 to 80 years. Narrowing of the joint space, irregularity of the articular margins, sclerosis of adjacent vertebral spongiosa and marginal proliferation of facets are the main changes

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Dr. P. B. Price, Dr. O. A. Ogilvie and Dr. C. A. Swinyard of the University of Utah Medical School gave help and advice.

1. Stookey, B.: Compression of the Spinal Cord Due to Ventral Extradural Cervical Chondromas, Arch. Neurol. & Psychiat. **20:** 275 (Aug.) 1928; Compression of Spinal Cord and Nerve Roots by Herniation of the Nucleus Pulposus in the Cervical Region, Arch. Surg. **40:** 417 (March) 1940.
2. Love, J. G., and Walsh, M. N.: Protruded Intervertebral Disks: A Report of 100 Cases in Which Operation Was Performed, J. A. M. A. **111:** 396 (July 30) 1938; Intraspinal Protrusion of Intervertebral Disks, Arch. Surg. **40:** 454 (March) 1940.
3. Mixter, W. J., and Ayer, J. B.: Herniation or Rupture of the Intervertebral Disk into the Spinal Canal, New England J. Med. **213:** 385 (Aug. 29) 1935. Mixter, W. J., and Barr, J. S.: Rupture of the Intervertebral Disk with Involvement of the Spinal Canal, ibid. **211:** 210 (Aug. 2) 1934.
4. Horwitz, M. T.: Degenerative Lesions in the Cervical Portion of the Spine, Arch. Int. Med. **65:** 1178 (June) 1940.

of degeneration found by Horwitz. He reported complete ossification with fusion of adjoining vertebrae in 3 of the 50 cases studied.

Despite the apparent frequency of this pathologic process I have not been able to find in the literature a case similar to the one here presented.

Fig. 1.—Lateral view of the cervical spine. Narrowing of the intervertebral spaces between the 4th and 5th cervical and between the 5th and 6th cervical vertebrae is evident. Irregular calcification and osteophytic projections from the anterior margins of the 4th, 5th and 6th cervical vertebrae can be seen. One cannot diagnose fracture or dislocation

REPORT OF CASE

History.—A Mexican laborer aged 56 was admitted complaining of pain in his shoulders and neck and inability to move his legs and hands, Aug. 7, 1943. He had had an attack of epistaxis of about three days' duration about one month before admission. At that time he bled large amounts and became weak and lethargic.

Two weeks before admission the patient was stopped by the police because he was staggering down the street. He was released when it was seen that he was not drunk. He complained of pain in his chest and back at this time.

Apparently in good health the earlier part of the evening before admission to the hospital, the patient was found early the next morning on the floor paralyzed in all four limbs. There was an unreliable account that he fell backward, hitting the back of his neck on a nearby chair, but evidence of trauma was circumstantial except for abrasions on his arm and face. It has not been ascertained whether he fell because of syncope or whether he slipped and fell. His past health had been excellent.

Examination.—The important physical and laboratory observations consisted of irregular breathing without respiratory distress, a pulse rate of 60 and a blood pressure of 80/55. There were a few abrasions on the left forearm, left cheek and left eye. The patient showed some pain on flexion or extension of the neck. There was tenderness on pressure over the 5th, 6th and 7th cervical spines. There was complete flaccid paralysis of both legs and musculature below the 5th cervical segment. Complete paralysis was present in the hands and wrists, but the biceps could be moved weakly. There was loss of sensation of all types below the 6th cervical segment. Deep tendon reflexes of the legs and the abdominal reflexes were absent. Tendon reflexes of the left arm were absent. The right radial, biceps and triceps reflexes were present but hypoactive. There was loss of tone of the rectal sphincter and urinary incontinence. The white blood cell count was 10,500 on admission; this rose to 21,000 during a subsequent attack of parotitis and was 18,000 at death fifteen days after admission. The urine was normal except for a trace of albumin. The blood Wassermann reaction was negative. The electrocardiogram was normal. The cerebrospinal fluid showed normal pressure and dynamics. The spinal fluid Wassermann reaction was negative. The fluid was of normal appearance; when a spinal tap was performed later there was moderate increase in globulin and the colloidal gold curve was 4433321000. X-ray examination showed no evidence of fracture or displacement of either the cervical or the dorsal spine. There was narrowing of the intervertebral 3d to 4th cervical space and 4th to 5th cervical space, and irregular calcification in these spaces. There was a questionable Schmorl's node in the inferior portion of the body of the 4th cervical. There was sclerosis of the vertebral spongiosa of the 4th, 5th and 6th cervical vertebrae and irregularity of the articulating margins of these vertebrae (fig. 1).

Course in the Hospital.—The patient was placed in a head halter with slight extension of the neck and 5 pounds of traction, on the assumption that he may have sustained a dislocation of a cervical vertebra and that in transportation to the hospital this dislocation had been reduced. It was at first thought that he might have had a coronary occlusion resulting in a fall and a cervical injury. A cervical fracture was apparently ruled out by roentgenograms. Thrombosis of the anterior spinal artery also was considered.

Exploration was deemed inadvisable because the patient had come to the hospital about twenty hours after injury. In addition the pressure and dynamics of the cerebrospinal fluid were normal, and roentgenograms revealed no evidence of fracture or dislocation.

Fig. 2.—Appearance at autopsy of the spinal canal in the cervical region, taken from the posterior aspect. The herniated intervertebral disk substance between the 4th and 5th cervical vertebrae is obvious. One sees the adjacent hemorrhage and fraying of the posterior longitudinal ligament. The arrow points to the zone of pressure on the spinal cord.

After a few days the traction was discontinued. The neurologic status did not change appreciably.

Four days after admission he suddenly ceased breathing but was revived with stimulants and artificial respiration. The abdomen became progressively more distended.

Ten days after admission acute parotitis developed, the temperature rising to 101 F. Remission followed x-ray treatment and rigid mouth care. Decubitus ulcers developed on the buttocks and hips. Slight pitting edema of the legs and trunk was present.

Fig. 3.—The ossified disk itself. This was removed without difficulty simply by cutting a few strands of the posterior longitudinal ligament and lifting it out with forceps. Its consistency was between hard fibrous tissue and the spongiosa of a vertebral body.

On the fifteenth day the temperature went to 105 F., his respirations became irregular and rapid and he died quietly.

Autopsy.—The brain exhibited multiple arterial thromboses in the cerebrum, as well as thrombosis of the left internal carotid and middle meningeal vessels. It was thought that these features had been present only a short time. One must speculate whether they were embolic, cachectic or agonal in origin.

The heart showed fatty infiltration of the myocardium of the right side, a mild healed rheumatic valvulitis, and poor quality to most of the heart muscle. The coronaries were mildly sclerotic and showed thrombosis of the recurrent branch of the left coronary, the descending branch posteriorly and the proximal portion of the right coronary. There was an induced infarction of the posterior and lateral aspects of the left ventricular wall. These coronary thromboses seemed quite recent, having occurred certainly since admission.

Opening the spinal column revealed excessive mobility at the 4th to 5th and 5th to 6th cervical vertebrae. The ligaments of the articulation in this region were frayed, but the vertebrae were in normal alinement.

The epidural appearance of the cord was normal, but a soft defect could be palpated in the substance of the cord opposite the space between the 4th and 5th cervical vertebrae. The dura and the cord were divided three segments below this level and reflected upward. Directly anterior to this softened area in the cord there was a hard, irregularly calcified intervertebral disk which on slight flexion of the head would bulge about 1 cm. into the lumen of the spinal column. Obviously the herniated disk was responsible for the area of softening. Hematomyelia was not present grossly (fig. 2).

The disk itself was easily lifted from its bed, and it could be completely removed by cutting a few fibers of the posterior longitudinal ligament. It measured 1 by 1.5 by 0.5 cm., was hard and bony in appearance and was reddened by old hemorrhagic infiltration (fig. 3).

The posterior longitudinal ligament covering the other exposed intervertebral segments was intact, and there was no bulging or herniation of disk substance in any other region.

Pathologic Condition of the Cervical Spinal Cord.—Figure 4 shows profound degenerative changes induced in the distal spinal cord. This section was taken 5 cm. caudally from the zone of pressure on the cord and was stained by a modification of the Marchi technic. Magnification is approximately 10 diameters.

The dorsal funiculus exhibits intense degeneration in the areas of the peripheral fasciculus cuneatus and the fasciculus gracilis. One found moderate degeneration in the deeper zones of the fasciculus cuneatus and the comma tract of Schultz.

In the lateral and ventral funiculi there was diffuse and moderate degeneration involving most of the tracts both ascending and descending. It seems probable that the area of contusion of the cord was greater than was thought to be true from the gross appearance. In particular the corticospinal tracts, both ventral and lateral, showed definite demyelinization. One also saw degenerative change in the rubrospinal, ventral and lateral spinothalamic, tectospinal, spinocerebellar, lateral and medial vestibulospinal and spinotectal tracts.

With these changes before one it was not difficult to understand the corresponding clinical picture indicating profound damage to the spinal cord. It seems remarkable that the patient lived as long as he did.

COMMENT

This case presented a great amount of damage to the spinal cord. I have been unable to find a similar case in which, in the absence of fracture or dislocation, there was complete loss of cord function below the level of pressure on the cord, or one in which the protruding disk was so completely ossified.

It is interesting, but practically unimportant, to speculate whether a coronary heart attack precipitated the fall and its resultant trauma to the cord. Certainly the neurologic picture was entirely explained by the aforementioned pathologic condition in the spinal cord at the 4th to 5th cervical vertebrae.

The story of the patient being seen staggering down the street a few weeks before the final cord injury leads one to believe that cord pressure began at that time with herniation through the posterior longitudinal ligament.

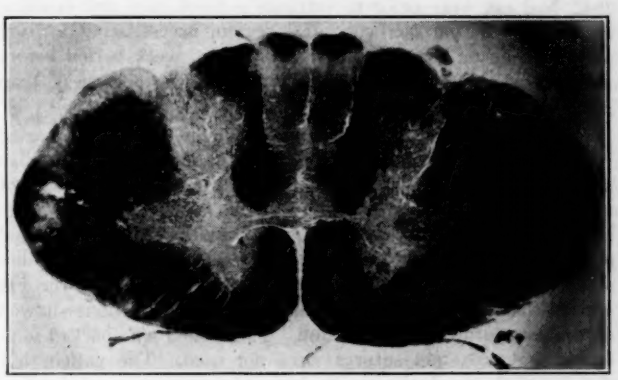

Fig. 4.—Modification of the Marchi staining technic. Reduced from a photomicrograph with a magnification of 10 diameters. Profound degenerative changes with demyelinization throughout most of the tracts are present. See text for more complete description.

It is possible that, if this patient had been examined by oblique roentgenograms with the head flexed, bony spurs, if not the ossified nucleus pulposus, would have been seen projecting into the spinal canal. At autopsy it could be seen that flexion of the neck would cause the loose intervertebral substance to protrude a centimeter or more into the canal.

SUMMARY

In a case of complete transverse cervical myelitis caused by herniation of an ossified nucleus pulposus it is believed that symptoms were initiated by trauma, the underlying pathologic condition being advanced degenerative changes in the intervertebral disk substance. Post-traumatic degeneration in the spinal cord was profound.

PILONIDAL CYSTS AND SINUSES IN IDENTICAL TWINS

PAUL F. FOX, M.D., CHICAGO

Pilonidal cysts and sinuses are relatively common surgical lesions. A great deal has been written about them, especially recently, concerned largely with various methods of treatment.

Evidently in identical twins they are infrequent, as only two references to such an occurrence were found.[1] It seems, therefore, worth while to report an additional case. Whether these congenital cysts and sinuses occur coincidentally in twins or whether the underlying defect is in the ovum itself is an interesting speculation.

REPORT OF CASES

CASE 1.—L. B., a girl aged 18, who entered the hospital on Jan. 10, 1941, had noticed a painful swelling in the sacrococcygeal region three weeks before, and this had been incised, with evacuation of considerable purulent material. Drainage had persisted for several days after incision, but at the time of entrance to the hospital there had been no drainage for two weeks. Examination showed a small mass about the size of a walnut in the sacrococcygeal region with a sinus above it opening directly in the midline. A few hairs were seen protruding through the external opening of the sinus. Probing the sinus revealed that it communicated with the mass.

Operation on January 11, with the patient under general anesthesia, consisted in excision of the mass and sinus in a block dissection. The segment removed was elliptic, about 6 cm. long and 3 cm. wide at the area of greatest width. The cut section showed a typical cystic cavity. The defect was packed with iodoform gauze and left open. Sutures were not used. The patient left the hospital on January 16 and for the next three and one-half weeks was seen at frequent intervals in order that the wound might be redressed and repacked. At the end of this period the defect was filled with granulation tissue and healing had occurred. She has had no postoperative difficulty.

CASE 2.—L. B., aged 19, who entered the hospital on Jan. 12, 1942, had one year prior to entrance noticed pain and swelling at intervals in the sacrococcygeal region, necessitating incision and drainage on two occasions. For a two week period before entrance she had noticed considerably more tenderness than usual.

Examination showed an indurated area in the sacrococcygeal region, with a typical external opening in the midline, and also one just to the left of the midline which marked the site of a previous incision for drainage. None of the signs of acute inflammation were present, and on January 13 the mass and area containing the two openings were excised in a block dissection. The specimen measured 7 by 4 by 3.5 cm., the cut section showed a cystic cavity, and microscopic sections showed chronic suppurative inflammation. The wound was packed with iodoform gauze, and sutures were not used. The patient left the hospital on January 20, but subsequent wound healing progressed rather slowly. It was not until March 22, 1942 that healing was complete. No subsequent symptoms or complaints have occurred.

5567 West North Avenue.

From the Department of Surgery, St. Anne's Hospital.

1. Goldberg, S. L., and Bloomenthal, E. D.: Pilonidal Cysts and Sinuses in Identical Twins, J. A. M. A. **113**: 1401 (Oct. 7) 1939. Mechling, C. C.: Congenital Proctologic Defects in Twins, ibid. **102**: 367 (Feb. 3) 1934.

Council on Pharmacy and Chemistry

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THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

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The following dosage forms have been accepted:

WILLIAM R. WARNER & CO., INC., NEW YORK

Tablets Pyridoxine Hydrochloride: 5 mg.

Ampuls Pyridoxine Hydrochloride: 1 cc. Each cubic centimeter contains pyridoxine hydrochloride 25 mg. and sodium phosphate-U. S. P. 7.5 mg.

DIPHTHERIA ANTITOXIN GLOBULIN MODIFIED (See New and Nonofficial Remedies, 1943, p. 519).

The following dosage form has been accepted:

PITMAN-MOORE COMPANY, INDIANAPOLIS

Diphtheria Antitoxin Pepsin Digestion Refined: Syringes containing 1,000 and 10,000 units and vials containing 20,000 units. Preserved with merthiolate 1:10,000.

DIPHTHERIA TOXIN FOR THE SCHICK TEST (See New and Nonofficial Remedies, 1943, p. 560).

The following dosage form has been accepted:

PITMAN-MOORE COMPANY, INDIANAPOLIS

Diptheria Toxin for the Schick Test: 1 cc. vial containing sufficient diluted toxin for 10 tests. Preserved with 0.5 per cent phenol.

PURIFIED PROTEIN DERIVATIVE OF TUBERCULIN (See New and Nonofficial Remedies, 1943, p. 566).

The following dosage forms have been accepted:

PARKE, DAVIS & COMPANY, DETROIT

Tablets Tuberculin, Purified Protein Derivative (First Strength): Packages containing 2 vials (5 tests each) and 1 cc. vial of sterile diluent; packages containing 10 tablets (100 tests) with 10 cc. vial of diluent and packages containing 2 tablets (500 tests) with 60 cc. vial of diluent.

Tablets Tuberculin, Purified Protein Derivative (Second Strength): Packages containing 2 vials (5 tests each) and 1 cc. of sterile diluent; packages containing 10 tablets (100 tests) with 10 cc. vial of diluent and packages containing 2 tablets (500 tests) with 60 cc. vial of diluent.

Tablets Tuberculin, Purified Protein Derivative (First and Second Strength): Packages for individual testing containing 2 vials, 1 tablet each of first strength and 2 vials, 1 tablet each of second strength with a 5 cc. vial of sterile diluent.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1943, p. 182).

The following additional dosage form has been accepted:

E. R. SQUIBB & SONS, NEW YORK

Sulfathiazole Powder Sterilized: 5 Gm. and 10 Gm. vials.

SULFATHIAZOLE SODIUM (See New and Nonofficial Remedies, 1943, p. 190).

The following additional dosage form has been accepted:

E. R. SQUIBB & SONS, NEW YORK

Sulfathiazole Sodium Sesquihydrate (Not Sterilized): 50 Gm. bottles.

MEDICAL LICENSURE STATISTICS FOR 1943

FORTY-SECOND ANNUAL PRESENTATION OF LICENSURE STATISTICS BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Table of Contents

	Page
STATE BOARDS OF MEDICAL EXAMINERS	
Licenses Issued	121
Candidates Examined by Medical Examining Boards	125
Consolidated Examinations	127
Failures	128
Registration by Reciprocity and Endorsement	129
Licentiates Representing Additions to the Medical Profession	133
Licensure Under the Accelerated Program	134
Acceleration of Premedical Courses	134
Required Internships	135
Licensure for the Relocated Physician	136
Annual Registration	136
Candidates Examined, 1939-1943	136
Graduates of Approved Schools and Others Registered, 1922-1943	137
Graduates of Unapproved Medical Schools Registered, 1938-1943	138
Graduates of Schools of Osteopathy Registered by Medical Examining Boards, 1938-1943	138
Physicians Examined on the Basis of Credentials Obtained in Countries Other than the United States and Canada	139
BOARDS OF EXAMINERS IN THE BASIC SCIENCES	142
NATIONAL BOARD OF MEDICAL EXAMINERS	144
EXAMINING BOARDS IN THE MEDICAL SPECIALTIES	147

This forty-second annual compilation of medical licensure and allied statistics by the Council on Medical Education and Hospitals covers the year 1943 and includes data regarding (*a*) medical examining and licensing boards of the United States, the District of Columbia, the territories and possessions of the United States, (*b*) boards of examiners in the basic sciences, (*c*) the National Board of Medical Examiners and (*d*) examining boards in the medical specialties.

The official reports which form the basis for these compilations have been contributed throughout the year by the medical licensing boards of the United States, Alaska, Hawaii and the Virgin Islands; the homeopathic medical examining boards of Connecticut, Delaware and Maryland; the eighteen boards of examiners in the basic sciences in operation last year, the fifteen approved examining boards in the medical specialties and the National Board of Medical Examiners. The homeopathic and eclectic examining boards in Arkansas and the homeopathic board in Louisiana did not license any one during the year. Likewise no physicians were registered for civilian practice in the Canal Zone. The statistics for Puerto Rico were not received in sufficient time for inclusion in this report.

The cooperation of the officers of these agencies in furnishing complete reports makes possible these annual compilations. The Council and THE JOURNAL express their appreciation to those who have supplied these data.

The tables referring to medical licensing boards include figures regarding the number of candidates examined for medical licensure in 1943, the numbers licensed and those who have secured their first medical license and represent additions to the medical profession. The state boards are discussed first, followed by the basic science boards, the National Board of Medical Examiners and the specialty examining boards.

STATE BOARDS OF MEDICAL EXAMINERS

LICENSES ISSUED

The number of licenses issued during the calendar year 1943 by the medical examining boards of the forty-eight states, the District of Columbia, Alaska, Hawaii and the Virgin Islands by examination and by reciprocity or endorsement of state licenses or by the certificate of the National Board of Medical Examiners is shown in table 1. The total number of licenses issued last year was 8,276; 5,974 were issued after examination and 2,302 by reciprocity and endorsement.

TABLE 1.—*Licenses Issued, 1943*

	On the Basis of		
	Examination	Reciprocity and Endorsement	Total
Alabama	34	28	62
Arizona	6	17	23
Arkansas	65	6	71
California	351	355	706
Colorado	67	26	93
Connecticut	58	87	145
Delaware	9	2	11
District of Columbia	35	61	96
Florida	129	0	129
Georgia	96	12	108
Idaho	9	2	11
Illinois	406	100	506
Indiana	233	46	279
Iowa	35	22	57
Kansas	86	23	109
Kentucky	80	35	115
Louisiana	230	49	279
Maine	29	6	35
Maryland	143	49	192
Massachusetts	254	94	348
Michigan	184	105	289
Minnesota	196	36	232
Mississippi	79	27	106
Missouri	195	62	257
Montana	2	4	6
Nebraska	155	7	162
Nevada	0	15	15
New Hampshire	5	10	15
New Jersey	150	140	290
New Mexico	1	16	17
New York	633	279	912
North Carolina	115	51	166
North Dakota	1	3	4
Ohio	250	110	360
Oklahoma	51	21	72
Oregon	37	24	61
Pennsylvania	476	44	520
Rhode Island	18	9	27
South Carolina	45	10	55
South Dakota	5	2	7
Tennessee	174	55	229
Texas	290	68	358
Utah	16	27	43
Vermont	11	5	16
Virginia	264	38	302
Washington	53	25	78
West Virginia	23	16	39
Wisconsin	176	56	232
Wyoming	0	5	5
Alaska, Hawaii & Virgin Islands	14	12	26
Totals	5,974	2,302	8,276

TABLE 2.—CANDIDATES EXAMINED BY MEDICA

Marginal Number	SCHOOL	1 Alabama P	F	2 Arizona P	F	3 Arkansas P	F	4 California P	F	5 Colorado P	F	6 Connecticut P	F	7 Delaware P	F	8 Dist. Columbia P	F	9 Florida P	F	10 Georgia P	F	11 Idaho P	F	12 Illinois P	F	13 Indiana P	F	14 Iowa P	F	15 Kansas P	F	16 Kentucky P	F	17 Louisiana P	F	18 Maine P	F	19 Maryland P	F	20 Massachusetts P	F	21 Michigan P	F	22 Minnesota P	F
	ARKANSAS																																												
1	University of Arkansas School of Medicine					62	0									1	0	2	0																									1	0
	CALIFORNIA																																											
2	College of Medical Evangelists							64	0	1	0					2	0	2	0	3	0			1	0									1	0			1	0	0	1	2	0		
3	Stanford University School of Medicine							49	0																															1	0			2	0
4	University of California Medical School							101	0																															1	1				
5	Univ. of Southern California School of Med.			1	0			76	0																																			1	0
	COLORADO																																											
6	University of Colorado School of Medicine							3	0	89	0																																	1	0
	CONNECTICUT																																											
7	Yale University School of Medicine							1	0			4	0					1	0															1	0									1	0
	DISTRICT OF COLUMBIA																																											
8	George Washington Univ. School of Med.	1	0					2	0							14	2	1	0	1	0									1	0							5	0					1	
9	Georgetown University College of Medicine							2	0			3	0			2	0	3	0					1	0													13	1	1	2			1	
10	Howard University College of Medicine											1	0			3	0							2	0											1	0	5	0					1	
	GEORGIA																																											
11	Emory University School of Medicine	2	0													21	1	9	3	0				1	0																			1	
12	University of Georgia School of Medicine															5	1	9	1	0																							1	
	ILLINOIS																																											
13	Loyola University School of Medicine							3	0									1	0					38	0	2	0													2	0	2	0		
14	Northwestern University Medical School							7	0	1	0					2	0	1	0			1	0	66	1	1	0	1	0	1	0			1	0					4	1	6	0	9	0
15	University of Chicago, The School of Med.	2	0					4	0	1	0					3	0	1	0					59	0	1	0															3	0	2	0
16	University of Illinois College of Medicine							17	0									1	0					117	0	3	0															3	0
	INDIANA																																											
17	Indiana University School of Medicine							2	0									2	0					1	0	218	0											1	0					2	0
	IOWA																																											
18	State University of Iowa College of Med							6	0	1	0					1	0	1	0									81	1											0	1				
	KANSAS																																											
19	University of Kansas School of Medicine																													81	0													2	0
	KENTUCKY																																											
20	University of Louisville School of Medicine			1	0			5	0									1	0													150	1							0	1			1	0
	LOUISIANA																																											
21	Louisiana State University School of Med.							4	0									2	0															148	1							1	0
22	Tulane Univ. of Louisiana School of Med.	7	0			1	0	2	0	1	0					1	0	8	0					1	0									3	0	67	0					1	0
	MARYLAND																																											
23	Johns Hopkins University School of Med.					1	0	1	0							1	0	2	0							1	0											96	0	1	0			2	0
24	University of Maryland School of Medicine and College of Physicians and Surgeons									4	0	1	0	1	0	4	0																					123	1	1	0				
	MASSACHUSETTS																																											
25	Boston University School of Medicine																	1	0															1	0					3	0			3	
26	Harvard Medical School							7	0			1	0					1	0	1	0													2	0	6	0	5	0	6	0			5	0
27	Tufts College Medical School							1	0			5	0					1	0																	4	0			11	0	1	0			2
	MICHIGAN																																											
28	University of Michigan Medical School							6	0							2	0	3	0			2	0	2	0											1	0					174	1	3	0
29	Wayne University College of Medicine							3	0									1	0																	1	0					97	0	2	0
	MINNESOTA																																											
30	University of Minnesota Medical School							5	0									1	0					1	0													1	0	2	0	1	0	18	0
	MISSOURI																																											
31	St. Louis University School of Medicine							8	0	1	0			1	0							1	0	1	0																			1	0
32	Washington University School of Medicine							6	0							1	0	1	0					1	1											0	1							5	0
	NEBRASKA																																											
33	Creighton University School of Medicine							18	0	3	0							1	0					1	0			17	6	1	0							1	0					2	
34	University of Nebraska College of Medicine							4	0													1	0					2	0													2	0
	NEW YORK																																											
35	Albany Medical College																																											
36	Columbia Univ. Coll. of Phys. and Surgs.							4	0			3	1			3	0	3	1							1	0							2	0	1	0	4	1			3	
37	Cornell University Medical College	1	0					3	0	1	0													1	0									1	0	1	0	0	1			2	
38	Long Island College of Medicine									2	0					1	0	1	0	1	0																	2	0					1	
39	New York Medical College, Flower and Fifth Avenue Hospitals							1	0			1	0					1	0																									1	
40	New York University College of Medicine	1	0					2	0			4	0					4	1	1	0			1	0					1	0					1	0	3	0	1	0			2	
41	Syracuse University College of Medicine											1	0																													1	
42	University of Buffalo School of Medicine							1	0									2	0																									1	
43	University of Rochester School of Medicine and Dentistry							1	0	1	0	1	0					1	0																	1	0			2	0			2	0
	NORTH CAROLINA																																											
44	Bowman Gray School of Medicine of Wake Forest College																																											
45	Duke University School of Medicine							2	0									10	1																			1	0			1	0		
	OHIO																																											
46	Ohio State University College of Medicine							5	0							1	0	1	1																					2	1			2	0
47	University of Cincinnati College of Medicine							1	0									4	0																			1	0	0	1			3	0
48	Western Reserve University School of Med.							1	0									1	0			1	0											1	0					1	0				
	OKLAHOMA																																											
49	University of Oklahoma School of Medicine							6	0																																			1	0
	OREGON																																											
50	University of Oregon Medical School							7	0											1	0	1	0															1	0			3	0	3	0
	PENNSYLVANIA																																											
51	Hahnemann Med. Coll. and Hosp. of Phila.			1	0			2	0			2	0	1	0																							10	1	2	0			1	
52	Jefferson Medical College of Philadelphia											2	0	5	0			3	0																	3	0			2	1	2	0	1	0
53	Temple University School of Medicine			1	0			6	0			1	1	1	0			4	0							1	0	1	0							1	0	4	0	0	1	1	0	4	0
54	University of Pennsylvania School of Med.	1	0					5	0			2	0			1	0			1	0			1	0																			4	0
55	University of Pittsburgh School of Med.							1	0									1	0					1	0																				
56	Woman's Medical College of Pennsylvania											2	0											1	0															1	0				
		1	2	3		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																				

P—Passed; F—Failed.

	Marginal Number	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Alaska & Hawaii	Totals	Examined—Passed	Examined—Failed	Percentage—Failed	No. Boards Examined by	Marginal Number
		P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F						
1										5 1																			1 0	73	72	1	1.4	6	1
2								1 0		2 2				6 1	3 1									4 0					1 0	99	94	5	5.1	16	2
3		1 0	1 0				0 1							1 0								2 0				2 0				60	59	1	1.7	9	3
4										2 0												1 0								109	108	1	0.9	6	4
5																														78	78	0	0.0	3	5
6			1 0											1 0										1 0						96	96	0	0.0	6	6
7								2 0		3 0			2 0			1 0														16	16	0	0.0	9	7
8								2 0		2 0 2 0						4 0					1 0 2 0			3 0 1 0						46	44	2	4.3	16	8
9							1 0 9 0			1 2			3 0			8 0 1 0					1 0			2 0						56	51	5	8.9	15	9
10		3 0								7 0 1 0																				23	23	0	0.0	8	10
11		3 0									1 0										1 0									123	122	1	0.8	7	11
12																														98	97	1	1.0	3	12
13								1 0		4 3			8 0			2 0						1 0			1 0 3 0					71	68	3	4.2	13	13
14		9 0 1 0								2 1			3 0	1 0 1 0				1 0			5 0			7 0 2 0	11 0				147	144	3	2.1	21	14
15										1 0			1 0		1 0 1 0					1 0						4 0				55	55	0	0.0	15	15
16		4 0								1 1											1 0			4 0		6 0				158	157	1	0.6	10	16
17																1 0		1 0						1 0						229	229	0	0.0	9	17
18																1 0					1 0									94	92	2	2.1	8	18
19		1 0																						1 0						85	85	0	0.0	4	19
20		1 0 1 0								2 1 2 0						1 0						2 0					1 0			171	168	3	1.8	13	20
21																														156	155	1	0.6	4	21
22	66	0								0 1						1 0					1 0 1 0								1 0	163	162	1	0.6	16	22
23										3 0 1 0								1 0			1 0			1 0		1 0 1 0		1 0	115	115	0	0.0	16	23
24										2 0 15 0			1 0			9 1						2 0				1 0				166	164	2	1.2	12	24
25								1 0		1 0								2 0												9	9	0	0.0	6	25
26							1 0 1 0			3 1 3 0			1 0			1 0					1 0			1 0 1 0		3 0			51	50	1	2.0	19	26
27										1 0								5 0												29	29	0	0.0	8	27
28		2 0						1 0		3 1 1 0			2 0													1 0 4 0		2 0	211	209	2	0.9	16	28
29													1 0																105	105	0	0.0	6	29
30		1 0 1 0											1 0								1 0			2 0		1 0			207	207	0	0.0	13	30
31			187 0					2 0		4 0						1 0 1 0													208	208	0	0.0	11	31
32	2	0	189 0							2 0 4 0						1 0 1 0								1 0				1 0	217	251	2	0.9	14	32
33		1 0		13 0						1 1					2 1			1 0			1 0		5 0		1 0				75	67	8	10.7	15	33
34				134 0									1 0								1 0					2 0				147	147	0	0.0	8	34
35																1 0														1	0	0	0.0	1	35
36		1 0						1 0		6 1 1 0			1 0			7 0 2 0					2 0			3 0 2 0		1 0			52	48	4	7.7	19	36
37								3 0		17 1 2 0						3 0													35	33	2	5.7	11	37
38								10 0		5 0											1 0			1 0					83	78	5	6.0	9	38
39								2 0		2 0	1 0					1 0													9	9	0	0.0	7	39
40								9 0		39 2 2 0			1 0			3 0										1 0			77	74	3	3.9	16	40
41								1 0		23 1						1 0 1 0 1 0							1 0						30	29	1	3.3	7	41
42										3 0			1 0	1 0		2 0													10	10	0	0.0	6	42
43										16 0			8 0													1 0			34	34	0	0.0	10	43
44											23	0																	23	23	0	0.0	1	44
45											11	0				1 0													27	26	1	3.7	6	45
46													135 0			2 0													150	148	2	1.7	7	46
47										1 1			137 0		2 0														151	149	2	1.3	8	47
48										1 1			130 0			4 0													141	140	1	0.7	8	48
49														110 0 1 0										1 0					119	119	0	0.0	5	49
50										1 0					31 3 1 0									6 0		2 0		1 0	61	58	3	4.9	12	50
51							1 0	25 0		6 6 1 0			11 1			72 1 5 0						1 0		1 0					150	141	9	6.0	15	51
52								24 0			8 0		2 0			87 0								2 0	1 0				143	142	1	0.7	13	52
53		1 0						11 0		4 1 9 0			2 0			73 0				1 0		2 0			2 0 6 0		1 0		140	137	3	2.1	23	53
54		3 0						10 0		4 1 18 0			3 0			83 1 1 0 2 0						1 0		1 0 2 0	3 0	2 0		1 0	151	149	2	1.3	21	54
55																72 0													75	75	0	0.0	4	55
56								1 0		5 1						4 0								1 0					16	15	1	6.3	7	56

TABLE 2.—CANDIDATES EXAMINED BY MEDICAL

Marginal Number	SCHOOL	1 Alabama P	F	2 Arizona P	F	3 Arkansas P	F	4 California P	F	5 Colorado P	F	6 Connecticut P	F	7 Delaware P	F	8 Dist. Columbia P	F	9 Florida P	F	10 Georgia P	F	11 Idaho P	F	12 Illinois P	F	13 Indiana P	F	14 Iowa P	F	15 Kansas P	F	16 Kentucky P	F	17 Louisiana P	F	18 Maine P	F	19 Maryland P	F	20 Massachusetts P	F	21 Michigan P	F	22 Minnesota P	F
	SOUTH CAROLINA																																												
57	Med. Coll. of the State of South Carolina.	1	0																																										
	TENNESSEE																																											
58	Meharry Medical College																	1	0																										
59	University of Tennessee College of Medicine.	3	0			1	0											4	0																								
60	Vanderbilt University School of Medicine																	5	0																								
	TEXAS																																											
61	Baylor University College of Medicine									1	0																																
62	University of Texas School of Medicine							1	0																					1	0												
	VERMONT																																											
63	University of Vermont College of Medicine.											4	0																							1	0						
	VIRGINIA																																											
64	Medical College of Virginia							1	0									4	2															1	0								
65	University of Virginia Dept. of Medicine															1	0	5	0																								
	WISCONSIN																																											
66	Marquette University School of Medicine			1	0			13	1											2	0	1	0	1	0	1	0							1	0	1	0					4	0	10	0
67	University of Wisconsin Medical School			1	0			2	0															1	0									1	0								3	0
	CANADA																																											
68	Dalhousie University Faculty of Medicine																	2	0																								
69	Laval University Faculty of Medicine																																							2	1				
70	McGill University Faculty of Medicine							2	0			2	0											1	0	1	0									2	0	1	0	1	0			1	0
71	Queen's University Faculty of Medicine																							0	1																		
72	University of Alberta Faculty of Medicine																																										
73	University of Manitoba Faculty of Med.							1	1																																		
74	University of Montreal Faculty of Medicine											0	1																														
75	University of Toronto Faculty of Medicine.	1	0					1	0									1	0					6	1											1	0			1	0			1	0
76	University of Western Ontario Med. School.							1	0																																	1	0	2	0
77	Foreign Medical Faculties							19	10	1	0	12	5									1	0	27	24	1	0	3	0	1	0	5	0			4	3	21	11	19	35	0	1		
78	Extinct Medical Schools							11	0	2	0					1	0	2	0			0	1	30	0			0	1							1	0					1	0		
79	Unapproved Schools and Undergraduate									9	3	5	4											57	1	2	0					2	0							182	245				
80	Totals	20		6		65		519		116		74		9		44		137		195		10		420		233		114		86		162		230		32		310		548		300		290	
81	Totals—Examined—Passed	20		6		65		507		112		62		9		42		129		195		9		391		233		106		86		161		228		29		296		254		298		290	
82	Totals—Examined—Failed	0		0		0		12		3		12		0		2		8		0		1		29		0		8		0		1		2		3		14		294		2		0	
83	Percentage Failed	0.0		0.0		0.0		2.3		2.6		16.2		0.0		4.5		5.8		0.0		10.0		6.9		0.0		7.0		0.0		0.6		0.9		9.4		4.5		53.6		0.7		0.0	
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22	

P—Passed; F—Failed.

It does not follow that all physicians certified in a given year after examination were tested in that year. In twenty-three states, the District of Columbia, Alaska, Hawaii and Puerto Rico the internship is a requisite for practice, but in some of them a physician is permitted to take an examination before completion of the internship and, if successful, the license is withheld until completion of the internship. Licenses are also withheld in some states for proof of citizenship and minor technicalities. In others the licenses of those examined in December are dated and issued in the following year. This was particularly true last year with two graduating classes from the medical schools operating under the accelerated curriculum. Most of the schools granted M.D. degrees in March and December. While many of the December graduates were examined for medical licensure on receiving the M.D., for the most part their examination papers could not be graded in sufficient time for them to receive licenses during the last calendar year. Consequently, figures in table 1 for licenses issued will not entirely correspond with those of later tables which deal with physicians examined for medical licensure.

The greatest number of licenses during the calendar year 1943 were issued in New York, 912. Three other states licensed more than 500: California 706, Pennsylvania 520 and Illinois 506. Twenty-three states, the District of Columbia and the territories and possessions licensed fewer than 100. The smallest number of licenses (4) was granted in North Dakota. None were licensed by examination in Nevada, Wyoming or the Virgin Islands, and only 1 physician was registered by this method in New Mexico and in North Dakota. Eleven boards (notably California, Connecticut, the District of Columbia and Utah) licensed more physicians by reciprocity or endorsement than by examination. Florida, Idaho, Massachusetts, Rhode Island and Hawaii have no reciprocal agreements, but with the exception of Florida these states endorse diplomates of the National Board of Medical Examiners.

Increases in the number of physicians registered last year as compared with data reported for the year 1942 were noticeable in Alabama, Louisiana, Maine and Maryland, while more pronounced decreases in registration were effected in Indiana, Mississippi, Nebraska, New York, Texas, Virginia and Wisconsin. In Indiana and Texas this may be due partially to the fact that the medical schools of those states accelerated their curriculum at an earlier date. In New York there was also a large reduction in foreign graduates examined for licensure.

Twenty-six were registered in the territories and possessions as follows: by examination Alaska 1 and Hawaii 13; by endorsement Alaska 3, Hawaii 2 and Virgin Islands 7.

Totals for eight previous years by all methods of licensure are shown for comparison in table 3. Since 1937 fewer licenses have been issued annually. In 1943 the number registered decreased 291 as contrasted with the year 1942. Various factors have influenced this reduction, among which can be mentioned changes in the dates of graduation, the fact that physicians have entered military service immediately after graduation and the decrease in the number of European graduates applying for licensure. The effects of the accelerated medical school programs on numbers of licenses issued

Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Alaska & Hawaii	Totals	Examined—Passed	Examined—Failed	Percentage—Failed	No. Boards Examined by
P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F					Marginal Number
									1 0	3 0							84 0									1 0			90	90	0	0.0	5 57
												0 1			1 0				48 0						1 0				52	51	1	1.9	5 58
38 0	2 0												1 0		2 0				55 0	1 0				2 0					105	105	0	0.0	10 59
6 2 0									1 0										94 0										102	102	0	0.0	4 60
																				72 0									75	75	0	0.0	3 61
									1 0				1 0	1 0						99 0			1 0						98	98	0	0.0	8 62
																						16 0							21	21	0	0.0	3 63
									2	0 2 0													130 0						142	140	2	1.4	6 64
										4 0							1 0						104 0						115	115	0	0.0	5 65
2 0							1 0		12	2		6 0			1 1					1 0 1 0			1 0			56 0		1 0	121	117	4	3.3	20 66
5 0							1 0						1 0	2 0						1 0			2 0			62 0			82	82	0	0.0	12 67
									1	0															1 0				4	4	0	0.0	3 68
						1 1 1 1			3	2		1 0																	13	8	5	38.5	5 69
		1 0				1 0			4	0 1 0		2 0			1 0									2 0				23	23	0	0.0	15 70
									1	0																			2	1	1	50.0	2 71
																													0	0	0	0.0	0 72
																													3	2	1	33.3	2 73
					0 2											1 0													4	1	3	75.0	3 74
1 0									1	0									1 0							2 0			19	18	1	5.3	12 75
								1 0	2	1																			8	7	1	12.5	5 76
7 2 0	4 1		1 0				11 9 1 0		361	401		2 3			9 6			3 0		0 1			8 1 2 1				0 1	1,031	518	513	49.8	26 77
3 1 0	2 0								4	1		0 1		1 0	6 1	1 0	1 0	2 0			6 0		1 0 5	0 2 0	5 0			2 0	101	96	5	5.0	25 78
3 0 1	1 0		6 15	0 1		18 1			158	16									18	3			1 0			6 0		1 1	757	466	291	38.4	16 79
9 114	422	4	170	1	9	161	1	1,076	115	1	646	114	55	487	20	91	6	201	199	27	18	265	54	23	176	0	16	8,392					80
8 113	421	4	155	0	5	150	1	633	115	1	624	114	50	475	20	91	6	201	195	27	18	264	53	23	176	0	14	7,478					81
8 1	1	0	15	1	4	11	0	443	0	0	22	0	5	12	0	0	0	0	0	4	0	0	1	1	0	0	0	2	914				82
0.9	0.2	0.0	8.8	100.0	44.4	6.8	0.0	41.1	0.0	0.0	3.4	0.0	9.1	2.5	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.4	1.9	0.0	0.0	0.0	12.5				10.9	83
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50						

will probably appear for the first time in the 1944 licensure statistics, even though most schools graduated two classes in 1943. Many of those graduated in the second class, in December, will be licensed in 1944 and will be added to those 1944 graduates who are also licensed in that year.

In this nine year period 80,393 medical licenses have been issued, 56,003 after examination and 24,390 by endorsement of credentials.

TABLE 3.—*Licenses Issued, 1935-1943*

	Examination	Reciprocity and Endorsement	Total
1935	5,725	2,194	7,919
1936	6,275	2,772	9,047
1937	6,629	3,204	9,833
1938	6,557	2,956	9,513
1939	6,400	2,872	9,272
1940	6,289	2,865	9,154
1941	6,053	2,759	8,812
1942	6,101	2,466	8,567
1943	5,974	2,302	8,276
Totals	56,003	24,390	80,393

The figures given do not altogether represent individuals but include persons who may have been licensed in more than one state during a given year; nor does the total represent additions to the medical profession, since a physician may be licensed by examination in a nonreciprocating state. Among those licensed by reciprocity or endorsement are some who received licenses by endorsement of the certificate of the National Board of Medical Examiners but may not have been previously licensed. In other later tables can be noted the number who secured licenses for the first time and represent additions to the medical profession in the United States and its territories and possessions.

CANDIDATES EXAMINED BY MEDICAL EXAMINING BOARDS

Compilations referring to those examined for medical licensure by individual states, the District of Columbia, Alaska and Hawaii, indicating the numbers who passed and failed in each state and the medical school of graduation, are recorded in table 2. Throughout the year 8,392 were examined, of whom 7,478 passed and 914 failed, representing sixty-seven approved medical schools in the United States, eight of the nine approved medical schools of Canada, ninety-eight faculties of medicine and two licensing corporations of other countries, seven medical schools now extinct, seven unapproved institutions, and seven colleges of osteopathy and one individual who had not completed the medical course. Osteopaths who were granted the privilege to practice medicine, surgery or both by the medical examining boards are included in these statistics. Osteopaths in other states who obtain the legal right to special practice by the osteopathic board are excluded from these compilations.

The medical licensing boards have contributed their part in the present emergency by arranging examination schedules to coincide as nearly as possible with the graduating dates of the medical schools located within their states. Executive officers and members of examining boards are to be commended for adding this work to their already overtaxed responsibilities.

The 8,392 examinees represented 6,427 graduates of approved medical schools in the United States, of whom 1.5 per cent failed; 76 graduates of approved Canadian schools, 15.7 per cent of whom failed; 101 who graduated from approved medical schools no longer operating, with 5.0 per cent failures; 1,031 graduates of faculties of medicine located in countries other than the United States and Canada, 49.8 per cent of whom failed; and 757 graduates of unapproved schools with 38.4 per cent failures. The figures in some of these categories depart significantly from those for the year 1942. In 1943 there were 599 fewer foreign graduates examined, largely accounted for by the reduction by 501 in numbers of such candidates tested in New York. Unapproved schools provided 72 per cent more examinees than in the previous year. This may be accounted for almost entirely by the fact that in 1943 Ohio examined 174 graduates of schools not listed as approved medical schools as compared with no such examinees in 1942, and Massachusetts examined 427 such graduates in 1943 as compared with 320 in 1942. In Ohio, where all these individuals were graduates of osteopathic schools, 9.2 per cent failed. In Massachusetts 57.4 per cent of the graduates of unapproved schools failed.

TABLE 4.—*Graduates of Medical Schools in Canada Examined for Licensure in the United States, 1943*

	Examined	Passed	Failed
Alabama	1	1	0
California	6	5	1
Connecticut	3	2	1
Florida	3	3	0
Illinois	9	7	2
Indiana	1	1	0
Louisiana	1	1	0
Maine	2	2	0
Maryland	2	2	0
Massachusetts	5	4	1
Michigan	1	1	0
Minnesota	5	5	0
Missouri	1	1	0
Nebraska	1	1	0
New Hampshire	5	2	3
New Jersey	3	2	1
New York	15	12	3
North Carolina	1	1	0
Ohio	3	3	0
Pennsylvania	1	1	0
Rhode Island	1	1	0
Tennessee	1	1	0
Washington	2	2	0
West Virginia	1	1	0
Wisconsin	2	2	0
Totals	76	64	12

The most striking change in numbers examined is the increase in candidates from approved medical schools. There were 4,905 of these in 1942 and 6,427 in 1943, an increase of 23.7 per cent. This may be ascribed primarily to the accelerated program and the graduation of two classes by medical schools in 1943, and secondarily to increased enrolments. This increase more than offsets the decrease in applicants from foreign schools. The total taking examinations in 1943 was 8,392 as compared with 7,181 the preceding year, an increase of 14.4 per cent. This increase is not seen in the tables showing licenses issued because the licenses of many examined in December 1943 will be dated 1944.

As in table 1, the 8,392 physicians and others examined for medical licensure do not represent an equal number of individuals, since a candidate might take an examination in more than one state and is counted in each state. However, if a candidate fails more than once in a given state within the year he is counted in that state as only one failure.

The greatest number of graduates of any one school examined was 229 representing Indiana University School of Medicine. Of these none failed. Licenses were earned by these persons in nine states. More than 200 graduates of three other schools applied for licenses by examination last year, namely Washington University 217, the University of Michigan 211, St. Louis University 208 and the University of Minnesota 207. These high figures represent two classes of graduates of 1943. However, a small percentage are graduates of other years. Figures published in 1943 [1] revealed that in the year 1942 there were examined 4,609 graduates of 1940, 1941 and 1942 from approved medical schools in the United States. In that year the total number of graduates examined from sixty-five approved medical schools in the United States was 4,905. The percentage of failures of recent graduates in 1942 was 1.9, and of all graduates of these schools 2.4. In the calendar year 1943, while no compilation of recent graduates has been made, only 1.5 per cent of the 6,427 graduates of the approved medical schools in the United States failed.

Twenty-nine approved schools in the United States had no failures before medical licensing boards, thirty less than 5 per cent and seven between 5 and 10 per cent. One school, Creighton University, had 75 of its graduates examined in fifteen states with 10.7 per cent failures. Table 6 includes figures and percentages of all examined during 1943, i. e. those who were examined by the National Board of Medical Examiners in its final examination as well as those passing state tests. Judgment of the quality of graduates of these schools on the basis of their proficiency in examination tests is best ascertained by a perusal of this table.

Graduates of Northwestern University were examined in the greatest number of states—twenty-four. Temple alumni were tested in twenty-three states, the University of Pennsylvania in twenty-one states and Marquette University in twenty states. All other schools had their graduates examined in fewer than twenty states. The medical schools of the universities of Southern California, Georgia, Baylor and Vermont had graduates examined in fewer than four states. Only 1 graduate of Albany took a state written examination; this occurred in Pennsylvania. The Bowman Gray School of Medicine at Winston-Salem, N. C., which in recent years developed a four year program, graduated its first class in 1943. Twenty-three graduates were examined for licensure and passed. All these graduates were tested in North Carolina. This school was formerly a school of the basic medical sciences located at Wake Forest, N. C. It was given approval as a four year medical school by the Council on Medical Education and Hospitals in 1943.

Three of the five homeopathic boards in existence examined 11 candidates: Connecticut 2, Delaware 1

TABLE 5.—*Source of Candidates Examined, 1943*

Medical Schools	No.	No. Examined	No. Passed	No. Failed	Percentage Failed
Approved, in United States	67	6,427	6,334	93	1.5
Approved, in Canada	8	76	64	12	15.7
Extinct	7	101	96	5	5.0
Foreign	100	1,031	518	513	49.8
Unapproved Schools	14	757	466	291	38.4
Totals	199	8,392	7,478	914	10.9

1. J. A. M. A. **122**: 95 (May 8) 1943.

and Maryland 8. The homeopathic boards in Arkansas and Louisiana did not examine any one in 1943. The one eclectic board in existence, in Arkansas, likewise did not examine a candidate.

Seventy-six graduates of eight approved medical schools in Canada applied for medical registration in twenty-five states table 4), of whom 64 passed and 12 failed. The greatest numbers, 23 and 19, representing McGill University and the University of Toronto, were examined in fifteen and twelve states respectively. Normally larger numbers of the graduates of these schools secure licensure in this country. In 1942 the figures were 60 and 45.[2] This reduction in graduates from McGill and Toronto seeking licenses in the United States is probably related to the war. The highest percentage of failures was 75, representing 4 graduates from the University of Montreal examined in three states, only 1 of whom was successful. The state of New York examined 15 Canadian graduates, Illinois examined 9 and all other states fewer than 7. The 757 examinees from unapproved and osteopathic schools represented 462 graduates of unapproved medical schools, of whom 239 passed and 223 (48.2 per cent) failed, and 294 graduates of schools of osteopathy, of whom 227 passed and 67 (22.7 per cent) failed. In addition, 1 candidate who had not completed the medical course failed in Mississippi.

Graduates of osteopathic schools were examined by the medical boards of nine states, namely Colorado, Connecticut, Indiana, Massachusetts, Nebraska, New Jersey, Ohio, Texas and Wisconsin, while graduates of unapproved medical schools were examined in six states and Hawaii. These states included Illinois, Kentucky, Massachusetts, Missouri, Nevada and Virginia. Osteopaths in Colorado, Massachusetts, Nebraska, New Jersey, Ohio and Texas were examined in medicine and surgery, in Wisconsin in surgery only, and in Indiana in surgery and obstetrics. Connecticut examined 4 in medicine, 2 in surgery and 3 in medicine and surgery.

Graduates of medical schools of other countries were examined for licensure in twenty-six states and Hawaii.

The source of candidates for licensure last year on the basis of examination is further tabulated in table 5, giving totals for five groups, namely approved medical schools in the United States, those from Canada, schools no longer in existence, schools of foreign countries and unapproved institutions. As already mentioned, from the United States schools 1.5 per cent failed as did 15.7 per cent of the graduates of Canadian schools. The greatest percentage of failures represented two groups, foreign schools and unapproved schools. In these two groups, 49.8 and 38.4 per cent respectively failed. Five per cent of the schools now extinct failed.

Elsewhere are given figures referring to actual licentiates and additions to the medical profession.

CONSOLIDATED EXAMINATIONS

In the calendar year 1943, 6,427 graduates of approved medical schools in the United States were examined by medical licensing boards, of whom 1.5 per cent failed (table 6). In the same period 1,184 graduates of approved medical schools in the United States were tested in Part III of the examination of the National Board of Medical Examiners, of whom 1.3 per cent failed. In some instances schools having a high percentage of failures before licensing boards had few,

2. J. A. M. A. **122**: 93 (May 8) 1943.

TABLE 6.—*Consolidated Examinations, State Medical Examining Boards and the National Board of Medical Examiners, 1943*

School	Results by Medical Examining Board Tests		Part III Examination of National Board of Medical Examiners		Total Examined	Totals		
	P	F	P	F		P	F	%F
University of **Arkansas**	72	1	1	0	74	73	1	1.4
Coll. of Med. Evan. **(Calif.)**	94	5	52	3	154	146	8	5.2
Stanford University	59	1	5	0	65	64	1	1.5
University of California	108	1	1	0	110	109	1	0.9
Univ. of Southern California	78	0	3	0	81	81	0	0.0
University of **Colorado**	96	0	3	0	99	99	0	0.0
Yale Univ. **(Connecticut)**	16	0	47	0	63	63	0	0.0
Geo. Washington Univ. **(D.C.)**	44	2	48	2	96	92	4	4.2
Georgetown University	51	5	57	0	113	108	5	4.4
Howard University	23	0	3	0	26	26	0	0.0
Emory Univ. **(Georgia)**	122	1	..	..	123	122	1	0.8
University of Georgia	97	1	..	..	98	97	1	1.0
Loyola Univ. **(Illinois)**	68	3	1	0	72	69	3	4.2
Northwestern University	144	3	21	0	168	165	3	1.8
University of Chicago	55	0	5	0	60	60	0	0.0
University of Illinois	157	1	19	0	177	176	1	0.6
Indiana University	229	0	2	0	231	231	0	0.0
State University of **Iowa**	92	2	25	0	119	117	2	1.7
University of **Kansas**	85	0	..	..	85	85	0	0.0
Univ. of Louisville **(Ky.)**	168	3	2	0	173	170	3	1.7
Louisiana State University	155	1	1	0	157	156	1	0.6
Tulane University	162	1	7	0	170	169	1	0.6
Johns Hopkins Univ. **(Md.)**	115	0	9	0	124	124	0	0.0
University of Maryland	164	2	5	0	171	169	2	1.2
Boston University **(Mass.)**	9	0	64	0	73	73	0	0.0
Harvard Medical School	50	1	133	1	185	183	2	1.1
Tufts College Med. School	29	0	109	2	140	138	2	1.4
University of **Michigan**	209	2	1	0	212	210	2	0.9
Wayne University	105	0	..	..	105	105	0	0.0
University of **Minnesota**	207	0	7	0	214	214	0	0.0
St. Louis Univ. **(Missouri)**	208	0	10	0	218	218	0	0.0
Washington University	215	2	7	0	224	222	2	0.9
Creighton Univ. **(Nebraska)**	67	8	4	0	79	71	8	10.1
University of Nebraska	147	0	1	0	148	148	0	0.0
Albany Med. Coll. **(N. Y.)**	1	0	35	2	38	36	2	5.3
Columbia University	48	4	66	1	119	114	5	4.2
Cornell University	33	2	26	0	61	59	2	3.3
Long Island Coll. of Med.	78	5	20	1	104	98	6	5.8
New York Medical College	9	0	79	0	88	88	0	0.0
New York University	74	3	39	0	116	113	3	2.6
Syracuse University	29	1	7	0	37	36	1	2.7
University of Buffalo	10	0	62	1	73	72	1	1.4
University of Rochester	34	0	13	0	47	47	0	0.0
Bowman-Gray School of Med. **(North Carolina)**	23	0	..	..	23	23	0	0.0
Duke University	26	1	85	0	112	111	1	0.9
Ohio State University	148	2	..	..	150	148	2	1.3
University of Cincinnati	149	2	1	0	152	150	2	1.3
Western Reserve University	140	1	..	..	141	140	1	0.7
University of **Oklahoma**	119	0	..	..	119	119	0	0.0
University of **Oregon**	58	3	9	0	70	67	3	4.3
Hahnemann, Phila. **(Pa.)**	141	9	2	0	152	143	9	5.9
Jefferson Medical College	142	1	7	1	151	149	2	1.3
Temple University	137	3	12	0	152	149	3	2.0
University of Pennsylvania	149	2	17	0	168	166	2	1.2
University of Pittsburgh	75	0	..	..	75	75	0	0.0
Woman's Med., Pa.	15	1	7	0	23	22	1	4.4
Med. Coll. of **South Carolina**	90	0	..	..	90	90	0	0.0
Meharry Med. Coll. **(Tenn.)**	51	1	1	1	54	52	2	3.7
University of Tennessee	105	0	1	0	106	106	0	0.0
Vanderbilt University	102	0	4	0	106	106	0	0.0
Baylor University **(Texas)**	75	0	..	..	75	75	0	0.0
University of Texas	98	0	..	..	98	98	0	0.0
University of **Vermont**	21	0	14	0	35	35	0	0.0
Med. Coll. of **Virginia**	140	2	1	0	143	141	2	1.4
University of Virginia	115	0	1	0	116	116	0	0.0
Marquette Univ. **(Wisconsin)**	117	4	7	0	128	124	4	3.1
University of Wisconsin	82	0	..	..	82	82	0	0.0
Totals: U. S. Schools	6,334	93	1,169	15	7,611	7,503	108	1.4
Dalhousie Univ. **(N. S.)**	4	0	..	..	4	4	0	0.0
Laval University **(Quebec)**	8	5	1	0	14	9	5	35.7
McGill University **(Quebec)**	23	0	4	0	27	27	0	0.0
Queen's University **(Ontario)**	1	1	1	0	3	2	1	33.3
University of **Manitoba**	2	1	..	..	3	2	1	33.3
Univ. of Montreal **(Quebec)**	1	3	..	..	4	1	3	75.0
Univ. of Toronto **(Ontario)**	18	1	2	0	21	20	1	4.8
Univ. of Western Ontario	7	1	..	..	8	7	1	12.5
Totals: Canadian Schools	64	12	8	0	84	72	12	14.3
Extinct Medical Schools	96	5	7	0	108	103	5	4.6
Unapproved Schools	466	291	0	0	757	466	291	38.4
Foreign Medical Faculties	518	513	29	2	1,062	547	515	48.5
Totals	7,478	914	1,213	17	9,622	8,691	931	9.7

if any, failures before the National Board. In these consolidated figures the percentage of failures for approved medical schools in the United States was 1.4.

Of the Canadian graduates, 15.7 per cent failed state tests and 14.3 per cent the combined tests. Only 31 graduates of foreign faculties of medicine were admitted to the National Board's final examination, while 1,031 were examined by state licensing boards. The National Board does not admit to its examinations the graduates of unapproved medical schools in the United States.

The total of all examined before medical licensing boards was 8,392, of whom 7,478 passed and 914, or 10.9 per cent, failed. For both groups—state boards and the National Board—9,622 were examined; 8,691 passed and 931, 9.7 per cent, failed. These combined figures reduced the total proportion of licensure failures last year by 1.2 per cent. Twenty-six schools in the United States had no failures in either group.

FAILURES

It will be noted in table 7 that the United States is divided into two groups—the thirty states in which approved four year medical schools are located and those, including Alaska and Hawaii, which have no approved medical school within their boundaries. Presented is the number who failed state board examinations and were graduates of a medical school located in the state in which they were examined and, for comparison, the number of graduates licensed in a given state who obtained their professional training in schools in other states.

The three approved medical schools of Massachusetts had no failures last year in that state, while 21.3 per cent of those who obtained their medical education in 22 other approved schools failed. In New York 3.4 per cent of those who studied medicine in eight of the nine schools located in that state who appeared for licensure in New York in 1943 failed, and 9.5 per cent who obtained their medical training in thirty-four schools located in other states failed. Only 23 physicians failed examinations in the state in which the medical school they attended was located, and twenty schools had no failures from schools within their boundaries.

On the other hand, the percentage of failures in four states (District of Columbia, Kentucky, Michigan and Oregon) was greater in the case of graduates of schools in those states than it was for graduates of schools outside the state.

Practically all states require the applicant to receive a general average of 75 per cent and 50 per cent in any one subject. In case of failure in not more than two subjects the applicant is entitled to another examination in those subjects within twelve months. A few states consider such individuals as conditioned in the subjects in which they fail and do not report them to the Council as failures. In these instances they are not considered in the calculations in this study. When their grades are raised after a successful test they are recorded among those who passed.

In nineteen states having no medical school only two reported failures, namely Florida and New Hampshire. Forty-four schools were represented at Florida examinations with 6.1 per cent failures. In New Hampshire, with four schools represented, 25 per cent failed.

In another table dealing exclusively with failures (table 8) the data are further subdivided by the number of candidates who were licensed after previous failure. The figures are presented for three groups, namely graduates of approved medical schools, foreign faculties of medicine and unapproved institutions. These groups are classified according to the number licensed after failing a state board examination once and after two or more failures and indicates whether the single failures have been in the state of licensure or elsewhere; the table also indicates whether multiple failures have been in the state where licensed and/or elsewhere. The total number of candidates examined and licensed, or granted licenses by reciprocity or endorsement, in each state is also shown.

TABLE 7.—*Licensure Failures by Graduates of Approved Schools Located in the State Where Examined and Elsewhere, 1943*

	Total No. Examined of All U. S. Schools	No. Failures of Schools in State	No. Schools in State Represented	Per Cent Failed	No. Failures of Schools Out of State	No. Schools Out of State Represented	Per Cent Failed	Total Per Cent Failed in All U. S. Schools
Arkansas	65	0	1	0.0	0	3	0.0	0.0
California	473	0	4	0.0	1	43	0.2	0.2
Colorado	101	0	1	0.0	0	10	0.0	0.0
Connecticut	45	0	1	0.0	2	16	4.4	4.4
Dist. of Columbia	43	2	3	4.7	0	15	0.0	4.7
Georgia	195	0	2	0.0	0	8	0.0	0.0
Illinois	272	1	4	0.4	1	18	0.4	0.7
Indiana	229	0	1	0.0	0	8	0.0	0.0
Iowa	110	1	1	0.9	6	5	5.5	6.4
Kansas	85	0	1	0.0	0	4	0.0	0.0
Kentucky	155	1	1	0.6	0	2	0.0	0.6
Louisiana	228	1	2	0.4	1	11	0.4	0.9
Maryland	276	1	2	0.4	2	16	0.7	1.1
Massachusetts	61	0	3	0.0	13	22	21.3	21.3
Michigan	298	1	2	0.3	0	10	0.0	0.3
Minnesota	276	0	1	0.0	0	34	0.0	0.0
Missouri	413	0	2	0.0	0	15	0.0	0.0
Nebraska	147	0	2	0.0	0	0	0.0	0.0
New York	294	10	8	3.4	28	34	9.5	12.9
North Carolina	114	0	2	0.0	0	19	0.0	0.0
Ohio	463	0	3	0.0	2	21	0.4	0.4
Oklahoma	114	0	1	0.0	0	4	0.0	0.0
Oregon	54	3	1	5.6	2	11	3.7	9.3
Pennsylvania	464	2	6	0.4	3	30	0.6	1.1
South Carolina	90	0	1	0.0	0	5	0.0	0.0
Tennessee	260	0	3	0.0	0	3	0.0	0.0
Texas	177	0	2	0.0	0	14	0.0	0.0
Vermont	18	0	1	0.0	0	2	0.0	0.0
Virginia	254	0	2	0.0	0	13	0.0	0.0
Wisconsin	163	0	2	0.0	0	16	0.0	0.0
States Without Medical Schools								
Alabama	19				0	9	0.0	0.0
Arizona	6				0	6	0.0	0.0
Delaware	9				0	5	0.0	0.0
Florida	132				8	44	6.1	6.1
Idaho	8				0	7	0.0	0.0
Maine	23				0	12	0.0	0.0
Mississippi	110				0	7	0.0	0.0
Montana	4				0	4	0.0	0.0
Nevada	0				0	..	...	0.0
New Hampshire	4				1	4	25.0	25.0
New Jersey	119				0	22	0.0	0.0
New Mexico	0				0	..	...	0.0
North Dakota	1				0	1	0.0	0.0
Rhode Island	18				0	8	0.0	0.0
South Dakota	1				0	1	0.0	0.0
Utah	21				0	12	0.0	0.0
Washington	44				0	18	0.0	0.0
West Virginia	20				0	11	0.0	0.0
Wyoming	0				0	..	...	0.0
Alaska & Hawaii	11				0	10	0.0	0.0

Of the 8,276 licentiates in 1943, 571 had previously been unsuccessful before a licensing board. From the approved schools 156 of those licensed had previously failed a state board examination. Seventy failed once before being licensed in a given state and 57 after one failure elsewhere. Twenty-nine received licenses after more than one failure, 11 of whom were registered in the original state, 14 elsewhere; four failed in the state where licensed and elsewhere.

Three hundred and fifty-nine graduates of foreign faculties of medicine and 56 graduates of unapproved schools were licensed after previous failure.

In the computation of these statistics it was noted that 81 graduates of foreign faculties of medicine failed five or more times before licensure, likewise 6 graduates of unapproved institutions failed at least five times

each. Of the foreign graduates 28 had five failures before obtaining a license, 27 had six, 14 failed seven examinations, 4 individuals failed eight, 3 nine, 1 ten times, 3 failed eleven and 1 failed thirteen tests. The 6 graduates of unapproved institutions failed as follows: five tests, 1; six tests, 1; seven tests, 2; eight tests, 1, and 1 failed after thirteen attempts. The majority of these physicians with multiple failures were Massachusestts and New York examinees.

In fourteen states all physicians licensed last year had no failure in a state medical examination before being registered. There were 1,004 such individuals. With the exception of California, Connecticut, Illinois, Maryland, Massachusetts, New Jersey, New York and Pennsylvania the number of physicians licensed throughout the country in each state after having previously failed was less than 10.

TABLE 8.—*Failures Before Medical Licensing Boards by Licentiates, 1943*

	Licenses Issued by Examination, Reciprocity or Endorsement	Approved Schools					Foreign Schools					Unapproved Schools					Total Failures by Licentiates, 1943
		Licensed After One Failure		Licensed After Two or More Failures			Licensed After One Failure		Licensed After Two or More Failures			Licensed After One Failure		Licensed After Two or More Failures			
		Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	
Alabama	62	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Arizona	23	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Arkansas	71	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
California	706	14	8	4	2	2	3	4	..	4	..	..	..	..	..	..	41
Colorado	93	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Connecticut	145	1	1	..	1	1	1	4	3	2	2	..	..	1	..	..	17
Delaware	11	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	2
District of Columbia	96	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	1
Florida	129	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
Georgia	108	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Idaho	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Illinois	506	8	1	1	..	..	5	..	5	2	5	2	..	..	..	..	29
Indiana	279	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1
Iowa	57	5	..	..	..	..	..	1	..	..	..	..	..	..	..	..	6
Kansas	109	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	2
Kentucky	115	..	..	..	..	..	..	2	..	3	..	..	..	..	..	..	5
Louisiana	279	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	3
Maine	35	2	..	..	..	..	1	..	..	1	1	..	..	..	..	..	5
Maryland	192	1	1	..	2	..	2	1	..	2	4	..	..	..	..	..	13
Massachusetts	348	4	..	..	..	..	2	2	4	3	2	27	..	24	..	..	68
Michigan	289	..	2	..	1	..	..	1	..	..	..	..	..	..	..	..	4
Minnesota	232	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Mississippi	106	..	4	..	1	..	..	..	..	..	..	..	..	..	..	..	5
Missouri	257	..	2	..	1	1	..	1	..	1	..	..	..	..	..	..	6
Montana	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Nebraska	162	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Nevada	15	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	3
New Hampshire	15	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
New Jersey	290	..	7	..	2	..	2	5	..	17	3	..	1	..	..	..	37
New Mexico	17	..	2	..	..	..	..	..	..	1	..	..	..	..	..	..	3
New York	912	24	1	4	..	..	61	3	150	2	24	..	..	..	..	..	269
North Carolina	166	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2
North Dakota	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Ohio	360	..	2	..	..	..	..	1	..	1	..	..	..	..	..	..	4
Oklahoma	72	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	2
Oregon	61	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1
Pennsylvania	520	2	4	..	..	..	5	..	..	1	1	..	..	..	..	..	13
Rhode Island	27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
South Carolina	55	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
South Dakota	7	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	2
Tennessee	229	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Texas	358	1	1	1	..	..	..	..	..	..	..	1	..	..	..	..	4
Utah	43	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Vermont	16	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Virginia	302	..	2	..	1	..	..	1	..	2	..	..	..	..	..	..	6
Washington	78	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
West Virginia	39	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Wisconsin	232	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Wyoming	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Hawaii	26*	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Totals	8,276	70	57	11	14	4	82	28	162	45	42	30	1	25	0	0	571

* Alaska, Hawaii and Virgin Islands.

REGISTRATION BY RECIPROCITY AND ENDORSEMENT

Reciprocity and endorsement policies in effect in the United States, Alaska, Hawaii and Puerto Rico are given in tabular form in table 9. Four states—Florida, Idaho, Massachusetts and Rhode Island—as well as Hawaii have not established reciprocal agreements with regard to medical licensure. With the exception of Florida, these states and Hawaii will register diplomates of the National Board of Medical Examiners by endorsement. Those desiring licenses by reciprocity in eighteen states are required to obtain a certificate from the state board of examiners in the basic sciences before being eligible for licensure.

Some kind of reciprocal relationship in medical licensure has been established in forty-four states, the District of Columbia, Alaska and Puerto Rico. Twenty-five of these states, Alaska and Puerto Rico reciprocate with specifically indicated states. Twenty-four of them, including five which have specific reciprocity agreements, as well as the District of Columbia, are given discretionary powers under the medical practice acts. They will register physicians who present credentials which correspond with those required by their respective states at the time such licenses were issued. The states in which diplomates of the National Board of Medical Examiners and retired officers of the government services are accepted for licensure on the basis of these credentials are also indicated. Specific requirements, such as professional practice, oral examination and internship, are recorded, as is also the fee for a

license without written examination. Citizenship prerequisites are also indicated. In some states physicians of Canadian birth are exempt from the citizenship requirement. This is indicated in footnotes. Few states will accept graduates of foreign faculties of medicine on a reciprocal basis. Additional requisites or exemptions are mentioned. The fee for a license on this basis in the majority of states is $50. This chart will be available in reprint form and has proved to be of material assistance to physicians contemplating locating in another state.

The number of physicians granted licenses in 1943 to practice medicine and surgery without written examination on presentation of satisfactory credentials is given in table 10. There were 2,275 so registered who presented credentials from other states, the District of Columbia, Canada and foreign countries, the certificate of the National Board of Medical Examiners or one of the government services.

TABLE 9.—*Reciprocity*

Marginal Number	The Examining Board of	Reciprocates with, or Endorses Certificates Granted by: Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	Marginal Number
1	Alabama	..	..	+	+	+	..	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	..	+	+	1
2	Arizona	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
3	Arkansas (regular board)	+	+	..	+	+	..	..	+	..	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	..	+	+	..	+	+	3
4	California	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
5	Colorado	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
6	Connecticut (reg. & homeo. bds.)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
7	Delaware (regular board)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
8	District of Columbia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8
9	Florida	No reciprocity or endorsement policies											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9
10	Georgia	+	..	+	+	+	..	..	+	..	..	..	..	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	+	+	+	10
11	Idaho	No reciprocal relations											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11
12	Illinois	+	..	+	+	+	..	..	..	..	..	..	..	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	..	+	..	12
13	Indiana	+	..	+	+	+	..	..	+	..	+	..	+[32]	..	+	+	+	+	+	+	..	+	..	+	+	..	+	+	+	+	+	13
14	Iowa	+	..	+	+	+	..	+	+	..	+	..	+	+	..	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	14
15	Kansas	+	+	+[19]	+	..	..	+	+	..	+	..	+	+	+	..	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	15
16	Kentucky	+	..	+	+	+	..	+	+	..	+	..	+	+	+	+	..	+	..	+	..	+	..	+	+	..	+	+	+	+	+	16
17	Louisiana (reg. & homeo. bds.)	+	+	+	+	+	..	+	+	..	+	..	+	+	+	+	+	..	+	+	..	+	+	+	+	..	+	+	+	+	+	17
18	Maine	..	..	+	+	+	..	+	+	..	+	..	+	+	+	+	+	+	..	+	..	+	+	+	+	..	+	+	+	..	+	18
19	Maryland (reg. & homeo. bds.)	+	..	+	+	..	..	..	+	..	+	..	+	+	+	+	+	+	+	..	..	+	+	+	+	+	+	+	+	+	+	19
20	Massachusetts	No reciprocal relations											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20
21	Michigan	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	..	..	+	+	+	+	+	+	+	+	+	21
22	Minnesota	+	..	+	+	..	..	+	..	..	+	..	+	..	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	22
23	Mississippi	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	23
24	Missouri	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24
25	Montana	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25
26	Nebraska	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	26
27	Nevada	..	..	+[21]	+	+	..	..	..	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	..	+	..	..	27
28	New Hampshire	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28
29	New Jersey	+	..	..	+	+	..	..	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	..	..	..	+	..	+	..	..	29
30	New Mexico	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	30
31	New York	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31
32	North Carolina	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32
33	North Dakota	+	..	+	+	+	..	..	..	..	+	..	+	+	+	+	+	+	+	..	..	+	..	..	+	+	+	+	+	+	+	33
34	Ohio	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	34
35	Oklahoma	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	35
36	Oregon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	36
37	Pennsylvania	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	37
38	Rhode Island	No reciprocal relations											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	38
39	South Carolina	+	..	..	..	..	..	+	..	+	..	..	..	..	+	+	+	+	+	+	..	+	..	..	..	..	..	..	..	+	+	..	39
40	South Dakota	+	+	+	+	+	..	..	..	..	+	..	..	+	+	+	+	+	..	..	..	+	+	+	..	+	+	+	..	..	+	40
41	Tennessee	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	..	+	+	+	41
42	Texas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	42
43	Utah	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43
44	Vermont	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	44
45	Virginia	+	..	+	+	..	..	+	+	..	+	..	..	+	+	+	+	+	+	+	..	+	+	+	+	..	+	..	..	+	+	+	45
46	Washington	+	..	..	+	+	..	..	..	..	+	..	..	..	+	..	+	+	..	+	..	+	+	+	+	+	+	..	..	..	..	..	46
47	West Virginia	+	..	+	..	..	..	+	+	..	+	..	+	+	+	+	..	+	+	+	..	+	+	+	+	+	+	+	..	+	..	..	47
48	Wisconsin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	48
49	Wyoming	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	49
50	Alaska	+	..	+	+	+	+	..	+	..	..	..	..	+	..	+	+	..	+	..	..	+	..	+	+	..	+	..	..	+	+	+	50
51	Hawaii	No reciprocal relations											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51
52	Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	52

Some states have additional requirements for graduates of schools outside the United States and Canada.

+, indicates reciprocal or endorsement relationships have been established; .. indicates no reciprocal or endorsement relationships have been established.

1. 1st P, first papers required; ⊕, in citizenship column indicates full citizenship required.
2. In most cases there is a small additional recording or registration fee.
3. If state of original license grants similar privileges.
4. Internship accepted in lieu of one year's practice.
5. Professional practice required.
6. No professional practice required.
7. Just preceding application.
8. No basic science reciprocity—examination must be within the state.
9. Basic science certificate required either by reciprocity or examination in addition to basic science subjects of National Board.
10. Reserve officers not eligible.
11. Leading medical schools of Great Britain recognized.
12. Oral examination required when original license is ten or more years old.
13. Applicant must have resided in the state used as basis of application for one year after date on said certificate.
14. Oral examination required.
15. Unless in practice in another state for five years.
16. Actual practice for a period of three years immediately preceding date of application.
17. Practical, clinical examination required.
18. Foreign graduates only.
19. Regular and Homeopathic boards.
20. Licentiates of Florida, Idaho, Massachusetts, Rhode Island and Hawaii not eligible for license by reciprocity.
21. Regular board.
22. Fee same as applicant's state charges if more than $50.
23. Oral examination required if applicant's state requires it.
24. If an applicant passes the examination in the state from which he transfers after the completion of his internship, no practice is required.

California issued licenses to 355 physicians by this method and New York 279. Four other states endorsed 100 or more candidates, namely Illinois 100, Michigan 105, Ohio 110 and New Jersey 140. The largest number representing the same type of credentials was the group of 651 presenting certificates of the National Board of Medical Examiners. On the basis of the National Board's certificate 215 were certified by New York and 94 by Massachusetts.

More than 100 physicians presenting licenses issued in Illinois and New York were licensed in other states. No physicians holding licenses in Nevada, New Hampshire or New Mexico applied for registration in another state last year. One physician from Delaware, and on the basis of a license from El Salvador; in Mississippi, an Ontario license; and in North Carolina by endorsement of a license issued in Switzerland.

Seven were admitted to private practice in the Virgin Islands on presentation of satisfactory credentials.

and Endorsement Policies

Marginal Number	Reciprocates with, or Endorses Certificates Granted by: New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Alaska	Puerto Rico	At the Discretion of the Board	National Board of Medical Examiners	U. S. Government Services	Requirements: Basic Science Certificate	Internship	Professional Practice	Citizenship [1]	Fees, Dollars [2]	Miscellaneous	Marginal Number
1	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	+	+	+	+	+	..	+[3]	+	+	..	⊕	1[4]	⊕[45]	50	..	1
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+[5,6]	⊕[3]	..	3[5,7]	..	100	42	2
3	+	+	+	+	+	..	+	..	+	+	+	+	..	+	+	..	+	+	+	+	..	..	+[9]	..	⊕	..	1[4]	⊕	50[22]	42	3
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[13]	+[12,43]	+[10,14]	..	..	41	1[13]	..	100	43	4
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[9]	10	⊕	..	..	1[4]	1st P	50	42	5
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14,30]	+[14,36]	..	⊕[15]	..	..	3[4,16]	1st P	50	..	6
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[5]	+	..	⊕	2	⊕	100	..	7
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[3]	+[36]	+[5]	⊕	⊕	2[7]	..	50	..	8
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	⊕	..	..	..	..	..	9
10	..	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	..	..	..	..	+	..	..	..	0	⊕	50	..	10
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	..	..	⊕	..	⊕	50	..	11
12	..	..	+	+	+	+	+	..	..	..	+	+	+	+	+	..	+	+	+	+	..	..	+[17]	+[10,17]	..	⊕	..	1st P	25	17.42	12
13	+	+	+	+	+	+	+	..	..	+	+	+	+	+	+	..	+	+	+	+	..	..	+[49]	..	..	..	1[4]	..	50	..	13
14	..	+	+	+	+	..	+	..	..	+	+	..	+	..	+	+	+	+	+	..	..	..	+	..	⊕	⊕	1[4]	⊕[45]	50	..	14
15	..	+	+	+	+	..	+	..	+	+	+	+	+	+	+	..	+	+	+	+	..	..	+	..	..	..	1[4,7]	⊕	25	42	15
16	..	..	..	+	+	..	+	..	+	+	+	+	+	+	+	+	+	+	..	..	..	..	+	+	..	..	1[4]	⊕	50	42	16
17	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	..	..	..	..	..	..	..	33	1[4]	1st P[40,46]	50	42	17
18	..	..	+	+	+	+	+	..	+	..	+	+	+	+	+	..	+	+	+	..	..	..	+[14]	..	..	⊕[18]	1[4]	⊕[45]	52	..	18
19	..	+	..	+	+	+	+	..	+	..	+	+	..	+	+	..	+	+	..	+	..	+	+	..	..	..	1[4]	1st P	50	42	19
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..	0	1st P	25	..	20
21	..	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	+	..	..	+[38]	..	..	⊕[37]	1[4]	⊕	55	34	21
22	..	+	..	..	+	+	+	..	..	+	+	+	+	+	+	+	+	+	+	+	..	..	+	..	⊕	..	0	⊕[15]	75	17.42	22
23	..	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	+	..	..	+	..	..	..	..	⊕[15]	50	42.44	23
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[47]	..	..	⊕[23]	1[4]	⊕[45]	50	..	24
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[14]	..	..	⊕	1[4]	⊕	75	45	25
26	+	+	+	..	+	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	..	..	+[36]	..	⊕	..	1[4]	⊕	50	..	26
27	+	..	..	+	+	+	+	..	..	+	+	..	+	+	..	..	+	+	..	+	..	..	+	..	..	..	1[4]	1st P	100	14.42	27
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+	..	..	0	⊕[45]	20	42	28
29	+	..	+	+	+	..	+	..	..	..	..	+	+	+	+	..	+	+	..	..	..	+[.]	+	..	..	..	0	⊕	100	..	29
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+	⊕	..	1[4]	1st P	50	42	30
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..	..	2	1st P	25	..	31
32	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+	..	..	0	⊕	50	42.50	32
33	..	+	..	+	+	+	+	..	..	+	+	+	+	+	+	+	+	+	+	+	..	..	+	..	..	⊕	1	⊕[15]	50[22]	14.42	33
34	..	+	+	..	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	+	..	+	+	..	..	..	1[4]	⊕	50	28	34
35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	⊕	⊕	1[4]	⊕	100	42.44	35
36	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[20]	+[9,36]	..	⊕	⊕	1[4]	..	100	42	36
37	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+	⊕	⊕	2[24]	1st P	100	42	37
38	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	..	⊕	⊕	0	1st P	20	..	38
39	..	+	..	+	+	..	+	..	..	..	+	+	..	..	+	..	+	..	+	..	..	..	+	..	..	..	1[4]	⊕	50	42	39
40	..	+	+	+	+	..	..	+	..	+	+	+	+	+	+	+	+	+	..	..	..	..	+	+	⊕	⊕	1	1st P	50	42	40
41	+	+	..	+	+	..	+	..	+	+	..	+	+	..	+	+	+	+	..	..	..	..	+[30]	+	⊕	..	0	..	10	42	41
42	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	+	..	⊕	1[25]	⊕	50	31	42
43	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+	..	⊕	4[8]	⊕	50	42	43
44	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[3]	+[38]	..	..	⊕	0	⊕	50	..	44
45	+	+	..	+	+	..	+	..	+	+	+	+	..	+	..	+	+	+	..	..	..	+	+	+	..	⊕[18]	2[20]	⊕[45]	50	..	45
46	..	..	..	+	+	+	+	..	..	+	+	+	+	+	+	..	..	+	..	+	..	..	+[8]	..	⊕[8]	⊕	0	1st P	25	42	46
47	..	+[27]	+	+	+	..	+	..	+	+	+	+	+	+	+	..	..	+[28]	+	+	..	..	+	..	..	⊕	0	⊕	100	42	47
48	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	..	+	⊕	⊕	1[29]	1st P	50[22]	42	48
49	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	+[14]	+	..	⊕	0	⊕	50	..	49
50	..	+	+	+	+	+	..	..	..	..	+	+	+	+	+	+	+	+	..	..	..	..	+	..	..	⊕	0	⊕	100	50	50
51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	..	..	⊕	..	⊕	25	11.42.50	51
52	..	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[39]	..	⊕	0	⊕	25	..	52

25. Internship accepted if served in this state.
26. Internship accepted—considered equivalent to two years' practice.
27. Five years' practice.
28. Conditionally.
29. A two year internship is accepted.
30. Diplomates of National Board not required to have been in practice for three years.
31. Graduates before 1907 required to take oral examination.
32. Clinical examination required.
33. Reciprocity applicants only.
34. Supplemental examination required in certain cases when accepting the examination of a state with whom reciprocal relations have not been established.
35. May be licensed after a special (written) supplemental examination.
36. Fee for license on basis of National Board certificate, $50.
37. For matriculants after Oct. 15, 1937.
38. Fee, $20.
39. While on active duty only.
40. Permanent license withheld until completion of citizenship.
41. Graduates of foreign medical schools effective Sept. 15, 1935. Canadian schools exempted effective Sept. 19, 1939.
42. Graduates of foreign medical schools are not accepted.
43. Graduates of foreign medical schools must have fulfilled all requirements of California prior to admittance to examination for any certificate used as basis of application to California.
44. Graduates of approved schools of Canada eligible.
45. Not applicable to citizens of Canada.
46. Canadian citizens are required to file first papers.
47. Fee, $15.
48. Same as required of Utah candidates applying for licensure.
49. Diplomates are accepted on basis of reexamination. The question and answer manuscripts from the National Board are submitted for regrading.
50. All applicants must be graduates of a medical school approved by the American Medical Association.

two each from Florida, Idaho, Montana and Rhode Island obtained licenses in other states. Ten physicians were registered on the basis of Canadian or foreign credentials in seven states. One each was licensed in Arizona, New Mexico, New York and Oregon on the basis of a previous license from the Dominion of Canada as well as 3 in North Carolina. One each also was licensed in the District of Columbia

Not included in the table are 27 osteopaths licensed by medical examining boards in seven states. They are omitted since the credentials presented were osteopathic licenses. These osteopaths secured licenses in Indiana 3, Nebraska 1, New Hampshire 1, Oregon 3, Texas 2, Wisconsin 16 and Wyoming 1.

Fourteen retired officers of one of the government services received licenses without written examination

TABLE 10.—*Candidates Licensed by Reciprocity and Endorsement, 1943*

Marginal Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
State Issuing License by Reciprocity or Endorsement	Total Licensed	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	District of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Govt. Services	National Board of Medical Examiners	U. S. Terr. and Possessions	Canadian & Foreign	Miscellaneous
Alabama	28	..	..	..	..	..	..	..	..	..	1	..	..	1	1	1	..	3	..	..	..	..	1	1	..	..	..	..	..	..	..	1	1	..	..	..	..	2	..	1	..	5	2	..	..	1	..	..	..	..	..	4	..	..	..
Arizona	17	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2	..	1	1	1	..	..	..	1	..	..	..	..	..	..	..	..	3	..	1	..
Arkansas	6	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
California	355	..	3	..	..	3	1	..	1	1	1	2	49	8	9	6	2	5	..	6	2	17	15	..	13	1	20	..	..	7	..	43	..	3	24	3	6	16	1	..	..	5	5	3	..	2	3	1	7	1	6	54	6	..	..
Colorado	26	..	..	1	2	..	..	..	..	..	1	..	2	..	1	..	..	..	..	..	..	1	..	..	2	..	2	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	10	..	..	..
Connecticut	87	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	5	..	2	..	..	..	..	..	..	..	..	23	..	1	5	..	..	1	..	..	..	2	1	..	2	1	..	..	..	1	..	42	..	..	..
Delaware	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dist. Columbia	61	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	..	..	1	..	..	5	..	1	..	2	..	..	..	1	..	..	2	..	..	33	..	1	..
Florida	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Georgia	12	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	1	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	..	..	1	..	..	..	..	1	..	..	..
Idaho	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..
Illinois	100	1	..	..	5	1	..	..	..	..	..	..	..	4	2	4	3	3	..	2	..	9	4	..	13	..	2	..	..	..	..	..	..	..	3	2	1	3	..	..	5	3	1	..	1	..	1	10	..	..	17	..	..	..
Indiana	43	..	..	..	..	1	..	..	..	..	..	..	14	..	..	..	1	.	1	..	..	1	..	..	3	..	1	..	..	2	..	4	1	..	7	..	..	3	..	..	..	..	..	..	..	..	..	1	..	..	4	..	..	..
Iowa	22	..	..	1	..	..	..	..	..	..	..	..	4	..	..	1	..	..	..	..	..	1	..	1	1.	..	8	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	2	..	..	..
Kansas	23	4	..	..	1	..	..	..	..	..	..	..	5	..	1	..	..	..	..	1	..	..	..	..	2	1	7	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	1	..	..	..	..	..	1	..	4	..	..	..
Kentucky	35	..	..	1	1	..	..	..	..	..	..	..	3	1	2	..	..	1	..	1	1	..	..	..	1	..	..	..	..	..	..	1	1	..	4	..	..	2	..	..	..	2	1	..	..	4	1	1	..	4	2	..	..	..
Louisiana	49	2	..	3	2	1	..	..	..	..	1	..	4	2	3	2	..	..	1	2	..	2	2	2	..	..	2	..	..	..	..	5	1	..	2	..	..	2	..	..	..	4	4	..	1	..	..	..	..	..	..	..	..
Maine	6	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Maryland	49	1	..	..	..	..	..	..	6	..	1	..	2	3	1	1	..	..	..	..	..	..	1	..	..	..	1	..	..	1	..	5	2	1	1	..	..	6	..	1	..	..	..	..	..	2	..	4	1	..	..	9	..	..	..
Massachusetts	94	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	94	..	..	..
Michigan	105	5	..	2	8	1	1	..	1	..	..	..	9	5	2	..	1	..	..	8	..	..	2	..	2	..	4	..	..	1	..	4	..	..	17	..	..	6	..	..	..	6	3	..	2	3	..	1	4	..	7	..	..	..
Minnesota	36	..	..	1	..	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	2	..	..	2	..	5	..	..	..	..	1	..	..	..	1	2	2	..	..	..	..	..	..	..	1	..	..	3	..	13	..	..	..
Mississippi	27	2	..	1	..	..	..	..	..	..	..	..	1	..	..	2	..	4	1	2	..	..	1	..	..	..	..	..	..	..	..	2	..	..	1	1	..	..	..	..	..	1	1	1	..	..	1	..	3	..	..	3	..	1	..
Missouri	62	..	..	3	3	1	..	..	..	..	..	..	3	..	3	11	..	1	1	2	..	..	..	1	..	..	5	..	..	..	..	2	..	..	3	1	..	..	..	1	..	6	1	..	..	..	..	1	..	12	..	..	..
Montana	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Nebraska	6	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nevada	15	..	..	1	1	..	..	..	..	..	..	..	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	..	..	..
New Hampshire	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..
New Jersey	140	2	..	..	2	..	..	..	1	..	..	..	3	1	..	..	1	1	1	7	2	1	1	..	4	..	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..
New Mexico	16	..	..	..	..	2	..	..	..	..	..	..	2	2	..	1	..	1	..	1	1	..	..	..	..	..	1	..	..	..	..	65	..	..	1	1	..	16	..	..	..	..	..	..	..	2	..	1	2	..	25	..	..	..
New York	279	..	..	..	4	..	..	..	2	..	..	..	..	3	2	..	..	3	..	1	1	..	..	..	..	..	1	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	..
North Carolina	51	..	..	..	2	..	..	..	..	1	3	..	1	..	..	..	..	2	..	3	..	1	..	..	..	..	..	..	..	..	..	4	..	..	1	..	..	1	..	3	..	6	..	..	..	9	..	..	..	..	215	1	1	..
North Dakota	3	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	..	4	..
Ohio	110	..	1	1	3	..	3	..	..	..	..	..	14	..	2	2	6	2	1	4	2	5	3	4	11	..	2	..	..	..	..	5	..	..	..	2	..	8	..	1	..	6	1	..	..	2	..	2	1	1	..	13	..	..	..
Oklahoma	21	..	..	..	1	..	..	..	..	..	..	..	..	1	..	4	..	..	..	..	..	..	..	..	4	..	1	..	..	..	..	..	..	..	2	..	..	..	..	1	..	1	2	..	..	..	..	..	..	..	4	..	..	..
Oregon	21	..	..	..	3	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	1	..	..	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	5	..	1	..
Pennsylvania	44	..	..	..	..	1	..	1	..	..	..	..	1	..	1	..	2	..	..	1	1	2	1	..	..	..	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	..	..	..	..	1	..	..	..	20	..	..	..
Rhode Island	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2	1	..	..	..	..	..	..	3	..	3	..	1	2	..	..	..	..	..	..	1	..	..	..	1	..	..	2	..	..	9	..	..	..
South Carolina	10	1	..	..	..	..	..	..	..	..	3	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
South Dakota	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Tennessee	55	..	..	2	1	..	..	..	..	..	2	..	1	..	..	1	3	1	..	..	..	2	8	4	3	..	..	2	..	..	..	4	3	..	2	..	..	..	..	1	..	..	4	..	..	3	..	..	1	..	7	..	..	..
Texas	66	..	..	2	..	1	1	..	..	..	1	..	11	3	2	1	2	13	..	1	1	2	1	1	2	..	..	..	..	..	..	6	..	..	6	1	..	2	..	..	..	3	..	..	..	1	..	..	1	..	1	..	..	..
Utah	27	..	..	..	4	1	1	..	1	..	..	..	2	..	..	..	1	2	..	1	..	1	6	..	3	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..
Vermont	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..
Virginia	38	..	1	..	..	..	..	..	5	..	1	..	2	..	..	..	1	1	1	6	..	..	..	..	..	..	..	..	..	..	..	6	2	..	..	..	2	..	..	..	4	..	..	1	..	..	..	2	..	..	4	..	..	..
Washington	25	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	2	2	..	4	..	..	..	..	..	..	..	2	..	2	..	3	..	..	..	..	..	..	..	..	..	4	..	..	..	6	..	..	..
West Virginia	16	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	1	..	..	..	..	1	..	..	..	1	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..
Wisconsin	40	..	..	1	2	..	..	..	..	..	..	..	16	..	..	..	..	1	1	1	..	2	2	1	..	..	1	..	..	..	..	4	..	..	2	..	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wyoming	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	1	..	..	2	..	..	2	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Alaska, Hawaii & Virgin Islands	12	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	..	..	7
Totals	2,275	15	5	20	46	18	7	1	19	2	16	2	158	36	37	38	25	44	10	69	17	59	57	16	74	2	72	0	0	18	0	209	19	6	94	15	15	99	2	10	6	62	35	5	9	45	7	16	46	3	14	651	7	10	7
Marginal Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55

in six states: California 6, Kentucky 4 and 1 each in Missouri, North Carolina, Texas and Wisconsin.

On the basis of a license from one of the territories 7 physicians were registered in two states—California and New York. Two physicians presented to the California board licenses from Alaska and 4 a certificate issued in Hawaii. One physician secured a New York license, presenting for registration by this method a license from Puerto Rico.

Sixty-five licentiates of New York secured licenses to continue practice in New Jersey. Forty-nine from Illinois and 43 from New York were registered in California.

Diplomates of the National Board of Medical Examiners secured licenses in forty states and Hawaii. Six states endorsed the certificate of 25 or more physicians. The greatest number accepted by any one state was in New York, where 215 diplomates secured licenses to practice medicine.

Fewer than 25 physicians obtained reciprocity licenses in twenty-two states. There has been a noticeable decrease in physicians who migrated to other states, as evidenced by a reduction of 170 as compared with the number so registered in 1942. This is probably a condition related to the war.

LICENTIATES REPRESENTING ADDITIONS TO THE MEDICAL PROFESSION

Licentiates of 1943 representing additions to the physician population of the United States and Hawaii are recorded in table 11. The majority of these licentiates represent recent graduates. As previously mentioned, the figures regarding licentiates represent some candidates examined in previous years whose licenses were withheld pending compliance with a technicality, such as completion of internship and citizenship. Additions to the profession on the basis of reciprocity or endorsement represent physicians without a state license who during the year were certified on the basis of the certificate of the National Board of Medical Examiners and to a lesser extent acceptance of credentials from one of the government services, Canada and foreign countries.

The figures in table 11 represent additions to the medical profession in the United States. However, the majority of the recent graduates are now in the military services and only a small percentage of them can be considered to be additions to the present civilian physician population. It is not known how many of these are in civilian practice.

There were 5,952 additions to the medical profession in 1943. The number removed by death in the same period was 3,382. It would appear, therefore, that the physician population in the United States last year was increased by 2,570. In view of the accelerated curriculum with two classes graduating from most schools in 1943, one might expect that additions to the profession should be considerably higher. This in reality is the case at the present time. However, many physicians who obtained M.D. degrees in December of 1943 were not able to receive licenses until early in the year 1944, owing to administrative details. An accurate analysis can be made in 1945 when data for the current year are available.

The greatest number of physicians in any one state, 683, was added to the profession in New York. Both California and Pennsylvania added more than 400, and Illinois and Missouri more than 300. The normal increase in Missouri is about 200, but in this state two 1943 graduating classes are represented in the figures for last year. By comparison with 1942 figures [3] it can be noted that considerably more were licensed and represent additions to the profession in 1943 in the cases of California, Indiana, Massachusetts, Minnesota, Mississippi, Missouri, North Carolina, South Carolina, Virginia and Wisconsin. In New York 220 fewer appear in the tabulations as the result of the reduction in the physicians graduated from foreign faculties of medicine.

No one was added to the profession in Nevada, North Dakota and Wyoming, while in thirteen states between 100 and 299 received initial licenses. Twenty-eight states and Hawaii added fewer than 100.

TABLE 11.—*Licentiates Representing Additions to the Medical Profession, 1943*

	Examination	Reciprocity and Endorsement	Total
Alabama	31	1	32
Arizona	5	0	5
Arkansas	65	0	65
California	441	17	458
Colorado	65	2	67
Connecticut	43	27	70
Delaware	6	0	6
District of Columbia	13	24	37
Florida	31	0	31
Georgia	95	1	96
Idaho	3	0	3
Illinois	364	10	374
Indiana	231	2	233
Iowa	33	2	35
Kansas	86	0	86
Kentucky	75	0	75
Louisiana	225	0	225
Maine	22	0	22
Maryland	136	3	139
Massachusetts	223	75	298
Michigan	188	3	191
Minnesota	227	8	235
Mississippi	76	1	77
Missouri	316	6	322
Montana	2	0	2
Nebraska	70	1	71
Nevada	0	0	0
New Hampshire	5	1	6
New Jersey	102	25	127
New Mexico	1	0	1
New York	584	99	683
North Carolina	114	1	115
North Dakota	0	0	0
Ohio	246	8	254
Oklahoma	46	1	47
Oregon	31	3	34
Pennsylvania	434	10	444
Rhode Island	14	6	20
South Carolina	88	0	88
South Dakota	4	0	4
Tennessee	147	24	171
Texas	194	2	196
Utah	13	0	13
Vermont	10	2	12
Virginia	257	0	257
Washington	41	2	43
West Virginia	15	1	16
Wisconsin	159	1	160
Wyoming	0	0	0
Hawaii	4	2	6
Totals	5,581	371	5,952

Of the 5,952 licentiates constituting additions to the medical profession last year, 5,581 secured their licenses by examination and 371 by endorsement of credentials. The latter represent in the main diplomates of the National Board of Medical Examiners.

Increases in the physician population arranged in nine geographic divisions are shown in table 12. The Middle Atlantic and East North Central group of states added the greatest number, over 1,200 each. More than 700 were added in two groups—the West North Central states and the South Atlantic states. The fewest number of physicians, 91, were added to the

3. J. A. M. A. **119:** 160 (May 8) 1943.

medical profession in the Mountain states. Two states in this group—Nevada and Wyoming—did not add a single physician to the medical profession last year.

Calculations representing additions to the medical profession for a nine year period including 1943 are presented in table 13. The greatest addition in nine years was in 1937. In 1943 the figure decreased by 29 over that of the previous year. It is believed that the fluctuations in these figures for the period shown is due mainly to the numbers of graduates of foreign faculties of medicine. As has already been pointed out, the number of graduates of approved medical schools examined for licensure increased in 1943.

TABLE 12.—*Licentiates Representing Additions to the Medical Profession Grouped in Geographic Divisions, 1943*

	Examination	Reciprocity and Endorsement	Total
New England			
Maine	22	0	22
New Hampshire	5	1	6
Vermont	10	2	12
Massachusetts	223	75	298
Rhode Island	14	6	20
Connecticut	43	27	70
	317	111	428
Middle Atlantic			
New York	584	99	683
New Jersey	102	25	127
Pennsylvania	434	10	444
	1,120	134	1,254
East North Central			
Ohio	246	8	254
Indiana	231	2	233
Illinois	364	10	374
Michigan	188	3	191
Wisconsin	159	1	160
	1,188	24	1,212
West North Central			
Minnesota	227	8	235
Iowa	33	2	35
Missouri	316	6	322
North Dakota	0	0	0
South Dakota	4	0	4
Nebraska	70	1	71
Kansas	86	0	86
	736	17	753
South Atlantic			
Delaware	6	0	6
Maryland	136	3	139
District of Columbia	13	24	37
Virginia	257	0	257
West Virginia	15	1	16
North Carolina	114	1	115
South Carolina	88	0	88
Georgia	95	1	96
Florida	31	0	31
	755	30	785
East South Central			
Kentucky	75	0	75
Tennessee	147	24	171
Alabama	31	1	32
Mississippi	76	1	77
	329	26	355
West South Central			
Arkansas	65	0	65
Louisiana	225	0	225
Oklahoma	46	1	47
Texas	194	2	196
	530	3	533
Mountain			
Montana	2	0	2
Idaho	3	0	3
Wyoming	0	0	0
Colorado	65	2	67
New Mexico	1	0	1
Arizona	5	0	5
Utah	13	0	13
Nevada	0	0	0
	89	2	91
Pacific			
Washington	41	2	43
Oregon	31	3	34
California	441	17	458
	513	22	535
Territory			
Hawaii	4	2	6
Totals	5,581	371	5,952

In nine years there were 53,947 physicians added to the profession; 49,583 were licensed after a successful written examination and 4,364 by reciprocity or endorsement. In the same period 80,393 licenses were issued, 56,003 by examination and 24,390 by endorsement of credentials. Thus 26,446 licenses were obtained by physicians who had previously been licensed to practice medicine.

Estimated figures indicate that on Feb. 1, 1944 the number of physicians in continental United States, including those licensed in 1943, was 186,496. Excluding physicians who are in military service, engaged in full time hospital work, retired, not in practice or engaged in full time teaching, there remain about 100,000 physicians in private practice, some of whom are part time teachers.

LICENSURE UNDER THE ACCELERATED PROGRAM

All states, Alaska, Hawaii and Puerto Rico have adjusted their licensure legislation or board rulings, where such adjustments were required, so that graduates under the accelerated medical program are eligible for admission to practice. Legislation was required in several states. The necessary amendments were made to the medical practice acts in these states in 1942 and 1943. During the calendar year 1943 physicians who completed at least part of their medical courses under the accelerated plan were examined for medical licensure in all but seven states. None applied for licensure in Delaware, Nevada, New Hampshire, New Mexico, North Dakota, South Dakota, Wyoming, Alaska, Hawaii or the Virgin Islands.

TABLE 13.—*Licentiates Representing Additions to the Medical Profession, 1935-1943*

Year	Examination	Reciprocity and Endorsement	Total
1935	5,099	411	5,510
1936	5,548	629	6,177
1937	5,812	612	6,424
1938	5,759	501	6,260
1939	5,584	460	6,044
1940	5,432	455	5,887
1941	5,239	473	5,712
1942	5,529	452	5,981
1943	5,581	371	5,952
Totals	49,583	4,364	53,947

ACCELERATION OF PREMEDICAL COURSES

The minimum requirement for admission to approved medical schools since 1918 has been two years of college training, and in 1938 three years was recommended. In November 1942 the Council on Medical Education and Hospitals recommended that for the duration of the war premedical education, including satisfactory courses in physics, biology and chemistry, be included within two calendar years. Such a program was adopted by practically all medical schools of the country. The Army Specialized Training and Navy V-12 premedical programs call for less than two years of college training, but in both of these programs the studies are continuous and provide for the student carrying more than the normal peacetime studies per semester. Both the Army and Navy programs provide for work well in excess of the sixty semester hours constituting the normal two academic years of medical study.

With the exception of California, Connecticut and Nebraska (table 14) the state licensing boards, by statute in the majority of instances, require that an applicant for licensure must present evidence of having completed two years of college training. California now requires one year, and New Mexico has been added to the states having the two year requirement. Connecticut will require the two year college requirement for medical school graduates after 1946. With the exception of eleven states and Hawaii the licensing boards reported that the medical practice act permits the acceptance of premedical training completed on an accelerated basis or the Army or Navy premedical programs. Most states indicated that their board will accept applicants graduated under the accelerated plan of approved medical schools, thereby recognizing the certification of the premedical training by the dean of the medical school. In six states—Florida, Maine, Nebraska, North Dakota, Wisconsin and Hawaii—and the District of Columbia the licensing board has the authority to evaluate the premedical credentials even though the medical practice acts specify a stated premedical requirement. Of the remaining five states Delaware reported that it must secure a ruling from the attorney general; in Iowa the state university is authorized to evaluate the credentials; in New Jersey this responsibility rests with the Commissioner of Education; New York requires the Medical Student's Qualifying Certificate; credentials in Virginia are evaluated by the State Department of Education. One state, Maine, stated the premedical requirement to be two years according to the medical practice act. In this state medical school graduates under the accelerated curriculum were examined in 1943.

TABLE 14.—*Requirements of Preliminary Training by Medical Licensing Boards*

Two Years or More of College		
Alabama	Louisiana	Oklahoma
Alaska	Maine	Oregon
Arizona	Maryland	Pennsylvania
Arkansas	Massachusetts	Puerto Rico
Colorado	Michigan	Rhode Island
Delaware	Minnesota	South Carolina
District of Columbia	Mississippi	South Dakota
Florida	Missouri	Tennessee
Georgia	Montana	Texas
Hawaii	Nevada	Utah
Idaho	New Hampshire	Vermont
Illinois	New Jersey	Virginia
Indiana	New Mexico	Washington
Iowa	New York	West Virginia
Kansas	North Carolina	Wisconsin
Kentucky	North Dakota	Wyoming
	Ohio	
One Year of College		
California		Connecticut*
High School Graduation or Its Equivalent		
Nebraska		

* Two year college requirement for graduates after 1946.

TABLE 15.—*Internship Required by Medical Schools*

College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Northwestern University Medical School
University of Minnesota Medical School
Duke University School of Medicine
University of Alberta Faculty of Medicine
University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Montreal Faculty of Medicine

It would appear that the accelerated premedical requirements or the Army and Navy premedical programs will probably offer no licensure difficulties.

REQUIRED INTERNSHIPS

The licensing boards requiring a hospital internship, and the medical schools exacting this requirement for the M.D. degree are shown in tables 15 and 16.

Six schools in the United States require an internship for graduation, and these schools will accept the nine month internship now in effect in all hospitals offering this training. Medical schools in Canada have eight month internships.

The medical licensing boards of twenty-three states, the District of Columbia, Alaska, Hawaii and Puerto Rico require an internship. In the past year the requirement of an internship has been added in New Mexico. Some states require the internship of graduates from schools abroad and of applicants for reciprocity or endorsement.

TABLE 16.—*Internship Required by Medical Licensing Boards of All Candidates*

Alabama	Montana	Puerto Rico
Alaska	Nevada	Rhode Island
Delaware	New Hampshire	South Dakota
District of Columbia	New Jersey	Utah
Hawaii	New Mexico	Vermont
Idaho	North Dakota	Washington
Illinois	Oklahoma	West Virginia
Iowa	Oregon	Wisconsin
Michigan	Pennsylvania	Wyoming

Some states require the internship of graduates of medical faculties abroad and of reciprocity or endorsement applicants.

TABLE 17.—*Nine Month Internship*

	Additional Three Months in Civilian Hospital or Military Service Required	
Accepted as Fulfilling Internship Requirement	Will Give Examination at End of Nine Months	Will Not Give Examination Until Completion of Year's Service
Alaska	Alabama [1]	Illinois
Delaware	District of Columbia [1]	New Hampshire
Idaho	Iowa [1]	New Mexico
Michigan [1]	New Jersey [1]	
Montana [1]	North Dakota	
Nevada	Oklahoma [1]	
Pennsylvania [1]	Oregon [1]	
West Virginia	Puerto Rico	
Wyoming	Rhode Island [1]	
	South Dakota [1]	
	Utah [1]	
	Vermont [1]	
	Washington [1]	
	Wisconsin	

1. Will also give examination on completion of the medical course but withhold license until internship is completed.

At least during the war emergency, and because of the 9-9-9 house officer plan, eight states and Alaska (table 17) will accept a nine month internship as fulfilling the internship requirement. Twelve states, the District of Columbia and Puerto Rico require an additional three months in a civilian hospital or military service and will withhold the license until this is completed but will permit applicants for licensure to write the examination on completion of the nine month internship. In three states physicians are not eligible to take the examination until after completion of a year's internship, three months of which may be in the military service. Officers seeking licenses in these three states must delay licensure until after the war or seek furloughs to take the examinations. In the past it has been possible for officers to obtain furloughs for this purpose.

Five states (Connecticut, Maryland, Missouri, Texas and Virginia) whose laws do not require an internship withhold the licenses of candidates from schools requiring an internship for the M.D. degree until the internship is completed. In these states the examination may be taken at any time after completion of the medical school course.

TABLE 18.—*Temporary Permits, 1943*

State	Permit Valid For:	Permits Granted
Arizona	3 mos.	98
Delaware	1 yr.	2
Florida	6 mos. after cessation of hostilities	12
Georgia	Next board meeting	12
Kentucky	1-5 yrs.	8
Louisiana	Next board meeting	3
Maine	Duration of war	7
Nevada	2 yrs.	14
New Mexico	Next board meeting	13
North Dakota	Duration of war	7
Pennsylvania	6 mos. after cessation of hostilities	2
Virginia	Next board meeting	0
Washington	Next board meeting	52
West Virginia	Next board meeting	16
Wyoming	Next board meeting	5
	Total	244

A few of the medical schools and licensing boards maintain their own list of hospitals acceptable for intern training, but the list of approved internships compiled by the Council on Medical Education and Hospitals is generally used.

LICENSURE FOR THE RELOCATED PHYSICIAN

Removal of physicians from civilian practice has resulted in a shortage of physicians in critical areas, especially in some industrial and rural sections of the country. To assist physicians attempting to relocate in such areas the licensing boards of fifteen states provide for the issuance of temporary permits or certificates to practice medicine. These states, the length of the validity of the permit and the number of permits granted during the last calendar year are shown in table 18.

The New Jersey medical practice act exempts from its requirements a lawfully qualified physician and surgeon of another state taking charge temporarily of the practice of a lawfully qualified physician of New Jersey during his absence from the state. Such permission may be granted by the board of medical examiners for a period of not less than two weeks nor more than four months but not to exceed one year in the aggregate.

TABLE 19.—*Annual Registration*

Alaska	Hawaii	New York
Arizona	Idaho	North Dakota
Arkansas	Iowa	Oklahoma
California	Kansas	Oregon
Colorado	Louisiana	Pennsylvania
Connecticut	Minnesota	Texas
Delaware	Missouri*	Utah
District of Columbia	Montana	Washington
Florida	Nebraska	Wisconsin
Georgia	Nevada	Wyoming

* Biennial registration.

ANNUAL REGISTRATION

Twenty-seven states, the District of Columbia, Alaska and Hawaii require physicians to register their license annually. In table 19 are listed the states which exact this requirement. Wisconsin was added to the list during the calendar year 1943. West Virginia no longer requires annual registration of medical licenses. With one exception, Colorado, the requirement has been waived for physicians in military service. In some instances legislative action was necessary to obtain a waiver.

CANDIDATES EXAMINED, 1939-1943

The numbers of candidates examined for medical licensure in the United States and its territories and possessions for the last five years, 1939-1943, are given in table 20. For each year there is recorded the number who passed and failed licensing examinations. Totals for the five year period and the percentage of candidates who failed also are given.

During this period 38,791 examinations were given; 32,396 were successful and 6,395, 16.5 per cent, failed.

TABLE 20.—*Candidates Examined, 1939-1943*

	1939		1940		1941		1942		1943		Totals for Five Years		
	P	F	P	F	P	F	P	F	P	F	P	F	%F
Alabama	14	0	26	0	26	3	34	0	20	0	120	3	2.4
Arizona	11	1	20	1	17	0	9	0	6	0	63	2	3.1
Arkansas	68	0	58	0	60	0	62	0	65	0	313	0	0.0
California	383	19	396	29	400	11	459	15	507	12	2,145	86	3.9
Colorado	69	3	75	4	54	4	68	3	113	3	379	17	4.3
Connecticut	53	47	53	33	80	36	59	31	62	12	307	159	34.1
Delaware	11	2	15	0	18	0	7	0	9	0	60	2	3.2
Dist. Columbia	54	0	49	2	33	0	27	0	42	2	205	4	1.9
Florida	172	27	131	6	143	7	110	8	129	8	685	56	7.6
Georgia	90	0	88	0	94	2	96	0	195	0	563	2	0.4
Idaho	24	8	40	1	30	0	12	1	9	1	115	11	8.7
Illinois	523	18	542	24	474	46	421	48	391	29	2,351	165	6.6
Indiana	112	0	125	0	120	0	128	0	233	0	718	0	0.0
Iowa	104	2	67	5	67	0	44	1	106	8	388	16	4.0
Kansas	85	0	92	0	92	0	99	0	86	0	454	0	0.0
Kentucky	88	0	77	0	84	0	85	0	161	1	495	1	0.2
Louisiana	153	0	154	1	145	1	175	0	228	2	855	4	0.5
Maine	42	6	32	14	38	12	42	6	29	3	183	41	18.3
Maryland	187	16	175	18	177	9	165	11	296	14	1,000	68	6.4
Massachusetts	277	257	338	299	254	288	201	251	254	294	1,324	1,389	51.2
Michigan	217	0	247	0	230	0	196	0	208	2	1,197	2	0.2
Minnesota	217	1	196	0	240	0	199	1	290	0	1,142	2	0.2
Mississippi	21	0	42	0	38	0	43	2	113	1	257	3	1.2
Missouri	211	0	179	0	196	0	182	1	421	1	1,189	2	0.2
Montana	11	0	9	0	7	1	7	1	4	0	38	2	5.0
Nebraska	78	0	84	0	92	0	77	2	155	15	486	17	3.4
Nevada	4	0	3	1	5	2	1	0	0	1	13	4	23.5
New Hampshire	14	2	9	1	10	1	3	3	5	4	41	11	21.2
New Jersey	237	109	179	36	155	29	110	10	150	11	831	195	19.0
New Mexico	2	0	0	1	2	0	0	0	1	0	5	1	16.7
New York	1,024	695	956	1,088	888	968	1,071	669	633	443	4,572	3,854	45.7
North Carolina	57	0	65	0	54	0	77	0	115	0	368	0	0.0
North Dakota	17	1	24	0	15	1	6	1	1	0	63	3	4.5
Ohio	369	15	305	16	263	14	274	6	624	22	1,835	73	3.7
Oklahoma	43	0	47	0	54	0	54	0	114	0	312	0	0.0
Oregon	26	0	33	0	22	0	45	0	50	5	176	5	2.8
Pennsylvania	548	10	478	24	446	18	456	21	475	12	2,403	85	3.4
Rhode Island	25	0	19	0	22	0	35	0	20	0	121	0	0.0
South Carolina	48	0	41	0	45	0	46	0	91	0	271	0	0.0
South Dakota	15	0	7	0	9	0	5	0	6	0	42	0	0.0
Tennessee	193	0	188	1	199	4	190	0	201	0	971	5	0.5
Texas	208	15	209	25	177	13	289	15	195	4	1,078	72	6.3
Utah	17	0	9	0	15	0	14	0	27	0	82	0	0.0
Vermont	17	0	21	1	18	0	24	1	18	0	98	2	2.0
Virginia	113	1	142	1	146	3	145	1	264	1	810	7	0.9
Washington	59	1	48	0	69	1	60	0	53	1	289	3	1.0
West Virginia	33	0	38	0	34	0	27	0	23	0	155	0	0.0
Wisconsin	111	0	113	0	120	0	124	1	176	0	644	1	0.2
Wyoming	8	1	16	1	8	0	0	0	0	0	32	2	5.9
U.S. Territories & Possessions	30	4	30	2	63	8	15	2	14	2	152	18	10.6
Total Examined.	7,754		7,925		7,539		7,181		8,392		38,791		
Passed	6,493		6,290		6,057		6,078		7,478		32,396		
Failed	1,261		1,635		1,482		1,103		914		6,395		
Percentage Failed	16.3		20.6		19.7		15.4		10.9		16.5		

New York leads in the number of examinations given. In this state there were 4,572 successful tests in a five year period. Other states examining more than 2,000 included Pennsylvania 2,403, Illinois 2,351 and California 2,145. More than 1,000 were examined in seven other states and passed, namely Maryland, Massachusetts, Michigan, Minnesota, Missouri, Ohio and Texas.

The greatest percentage of failures occurred in three states, Massachusetts with 51.2 per cent, New York with 45.7 per cent and Connecticut with 34.1 per cent. The high percentage in Massachusetts is due to the fact that the licensing board has been required by law to admit to its examinations the graduates of substandard schools, many of whom repeatedly fail. How-

ever, graduates of such schools may not be eligible for the licensing examination in this state in the future. New York's high percentage of failures may be attributed to the large number of graduates of foreign faculties of medicine, who likewise repeatedly fail. Connecticut's candidates have included a relatively large proportion of foreign graduates, accounting partially for their high failure rate. Other high failure figures occurred in Maine, Nevada (with only 17 examined), New Hampshire, New Jersey and New Mexico. On the other hand, thirty-four states failed less than 5 per cent in the five year period. These include ten states which had no failures: Arkansas, Indiana, Kansas, North Carolina, Oklahoma, Rhode Island, South Carolina, South Dakota, Utah and West Virginia.

The percentage of failures in all states has decreased from 20.6 in 1940 to 10.9 in 1943, which is the lowest figure since 1937.

These figures represent examinations given and not individuals. A candidate who fails more than once in a state in a given year is counted only once, but should he also fail in a succeeding year he is counted in that year also. The same is true of successful candidates who migrate to other states. This group represents a recapitulation of the statistics computed annually and assembled for comparative purposes. It gives only a fair approximation of the number of physicians added to the profession in five years by the written examination method. Table 11 gives the corrected compilation of the number of physicians representing additions to the medical profession for this period.

TABLE 21.—*Registration, 1904-1943*

Year	Examined	Passed	Per-centage Failed	Reciprocity or Endorse-ment	Total Regis-tered
1904	7,056	5,693	19.3	1,005	6,698
1905	7,178	5,688	20.8	394	6,082
1906	8,040	6,373	20.7	1,502	7,875
1907	7,279	5,731	21.3	1,427	7,158
1908	7,775	6,089	21.7	1,284	7,373
1909	7,295	5,865	19.6	1,381	7,246
1910	7,011	5,719	18.4	1,640	7,359
1911	6,964	5,582	19.8	1,243	6,825
1912	6,880	5,467	20.5	1,273	6,740
1913	6,453	5,253	18.6	1,292	6,545
1914	5,579	4,379	21.5	1,439	5,818
1915	5,334	4,507	15.5	1,399	5,906
1916	4,878	4,151	14.9	1,353	5,504
1917	4,753	4,084	14.1	1,360	5,444
1918	3,667	3,184	13.2	1,047	4,231
1919	4,750	4,074	14.2	2,546	6,620
1920	4,796	4,062	15.3	2,558	6,620
1921	4,825	4,228	12.4	2,186	6,414
1922	4,031	3,539	12.2	2,073	5,612
1923	4,727	4,028	14.8	2,405	6,433
1924	5,392	4,756	11.8	1,923	6,679
1925	6,002	5,450	9.2	1,861	7,311
1926	5,770	5,314	7.9	1,955	7,269
1927	5,389	5,002	7.2	2,176	7,178
1928	5,458	5,090	6.7	2,228	7,318
1929	5,629	5,282	6.2	2,420	7,702
1930	5,571	5,255	5.7	2,366	7,621
1931	5,611	5,263	6.2	2,211	7,476
1932	5,675	5,247	7.6	1,885	7,132
1933	5,673	5,244	7.6	1,989	7,233
1934	6,144	5,627	8.4	2,160	7,788
1935	6,443	5,859	9.1	2,196	8,055
1936	6,917	6,223	10.0	2,775	8,998
1937	7,334	6,604	10.0	3,203	9,807
1938	7,461	6,589	11.7	2,956	9,545
1939	7,754	6,493	16.3	2,872	9,365
1940	7,925	6,290	20.7	2,864	9,154
1941	7,539	6,057	19.7	2,758	8,815
1942	7,181	6,078	15.4	2,466	8,544
1943	8,392	7,478	10.9	2,302	9,780

REGISTRATION, 1904-1943

A study of totals and percentages for the forty years 1904-1943 is included in table 21. This tabulation covers physicians registered by written examination and by reciprocity or endorsement of credentials. There is no definite trend in the numbers annually registered from 1906 to 1933, although in 1918 the number registered dropped to the all time low record of 4,231. After 1933 there was an upward trend for a time, followed by a decline which terminated in 1942. The decrease of more than 1,200 in 1918 was due to the sudden withdrawal of physicians and recent graduates from civilian life during World War I. By contrast, in 1943 the number registered increased almost 1,300 over the preceding year. The increase is a result of the accelerated curriculum and the universal effort on the part of the medical leaders of the country to maintain a steady flow of physicians for both civilian and military practice. In 1943 more physicians were examined than in any previous year. A large majority of these were recent graduates who secured licenses before assuming military duties.

There was a decrease in registration on the basis of credentials in 1943. This can be attributed to present conditions. The need for physicians in all communities encourages physicians still remaining in civilian practice to remain where they have been rather than to seek relocation.

The percentage of failures gradually dropped from 19.3 in 1904, when a great many proprietary medical schools were functioning, to 5.7 in 1930. This decrease in the percentage of failures is one of the very evident results from the improvement in the standards of medical education. With the migration of physicians to this country beginning in 1936 and the resultant licensure difficulties, the percentage of failures again began to rise, until in 1940 they surpassed even the 1904 figure. This rise is also attributable to the inability of graduates of unapproved schools to obtain licensure successfully without failure. In the last two years the number of foreign graduates applying for licensure has considerably decreased.

In analyzing this table it should be remembered that the figures represent multiple examinations by individuals in some instances rather than actual additions to the profession.

TABLE 22.—*Graduates of Approved Schools and Others Registered, 1922-1943*

Year	Graduates of Approved Schools		Others		Totals
	Number	Per Cent of Total	Number	Per Cent of Total	
1922	4,519	80.5	1,093	19.5	5,612
1923	5,196	80.8	1,237	19.2	6,433
1924	5,687	85.1	992	14.9	6,679
1925	6,314	86.4	997	13.6	7,311
1926	6,441	88.7	828	11.3	7,269
1927	6,410	89.4	768	10.6	7,178
1928	6,585	90.1	733	9.9	7,318
1929	7,003	91.0	699	9.0	7,702
1930	7,011	92.1	610	7.9	7,621
1931	6,932	92.8	544	7.2	7,476
1932	6,675	93.7	457	6.3	7,132
1933	6,774	93.7	459	6.3	7,233
1934	7,171	92.1	617	7.9	7,788
1935	7,362	91.5	693	8.5	8,055
1936	7,932	88.2	1,066	11.8	8,998
1937	8,389	85.6	1,418	14.4	9,807
1938	8,315	87.1	1,230	12.9	9,545
1939	8,067	86.2	1,298	13.8	9,365
1940	7,779	85.0	1,375	15.0	9,154
1941	7,766	88.1	1,049	11.9	8,815
1942	7,257	84.9	1,287	15.1	8,544
1943	8,591	87.8	1,189	12.2	9,780
Totals	154,176	88.2	20,639	11.8	174,815

GRADUATES OF APPROVED SCHOOLS AND OTHERS REGISTERED, 1922-1943

The educational fitness of physicians registered for the practice of medicine is recorded in table 22. In compiling these data, schools rated in classes A and B by the Council on Medical Education and Hospitals

of the American Medical Association since the first classification of schools in 1907 are included in the approved group. In the column headed "Others" the figures represent physicians who graduated prior to 1907, graduates of foreign faculties of medicine, class C graduates, osteopaths given recognition by medical licensing boards and graduates of schools not approved by the Council. In 1928 the classification of schools as A, B and C by the Council was discontinued, and medical schools have since been classified as approved or unapproved.

TABLE 23.—*Graduates of Unapproved Medical Schools Registered, 1938-1943*

	Examination						Reciprocity and Endorsement						
	1938	1939	1940	1941	1942	1943	1938	1939	1940	1941	1942	1943	Total
Arizona	1	2	0	0	0	0	0	0	0	0	0	0	3
Arkansas	1	0	0	0	0	0	1	0	0	0	0	0	2
California	0	0	1	1	0	0	0	1	0	0	0	0	3
Florida	2	1	0	0	0	0	0	0	0	0	0	0	3
Illinois	60	51	48	51	51	57	0	0	0	0	0	0	318
Indiana	0	0	0	0	0	0	3	1	2	0	1	0	7
Iowa	0	0	0	0	0	0	0	0	0	1	0	0	1
Kentucky	0	0	0	0	0	2	1	2	2	0	0	0	7
Massachusetts	58	79	98	90	105	177	0	0	0	0	0	0	607
Mississippi	0	0	0	0	1	0	0	0	0	0	0	0	1
Missouri	0	0	0	1	0	1	1	0	0	0	0	0	3
New Jersey	7	0	0	0	0	0	4	4	13	8	0	0	36
New Mexico	1	0	0	0	0	0	2	0	2	0	0	0	5
New York	0	0	0	0	0	0	8	12	8	0	0	0	28
Ohio	32	36	0	0	0	0	0	0	0	0	0	0	68
Pennsylvania	4	1	5	0	0	0	0	0	0	0	0	0	10
Texas	1	4	6	0	0	0	0	0	0	0	0	0	11
Virginia	0	1	0	0	0	1	0	0	0	0	0	0	2
Wisconsin	0	0	0	0	0	0	0	0	0	0	0	1	1
Hawaii	0	0	0	1	0	1	0	0	0	0	0	0	2
Puerto Rico	0	0	1	0	0	0	0	0	0	0	0	0	1
Totals	167	175	159	144	157	239	20	20	27	9	1	1	1,119

There were 9,780 candidates registered in 1943, of whom 8,591, 87.8 per cent, represented graduates of approved schools and 1,189, 12.2 per cent, the group designated as others.

In twenty-two years 174,815 were registered, including 154,176 approved graduates, 88.2 per cent, and 20,639 others, 11.8 per cent. The improved standards of medical education are again evident in a study of these totals and percentages. Since 1922 the number of graduates of approved schools has increased well beyond 4,500, representing more than 80 per cent of those annually registered. Until the influx of foreign graduates in 1936, those in the second group since 1924 have been fewer than 1,000.

In computing the figures for 1943 it is revealed that of the 9,780 candidates registered 8,561 represented graduates of approved or class A medical schools, 30 were graduates of schools rated in class B at the time of graduation, 499 were graduates of class C or unapproved medical schools and 690 were foreign graduates and graduates of medical schools before 1907, when the first classification of medical schools was made.

GRADUATES OF UNAPPROVED MEDICAL SCHOOLS REGISTERED, 1938-1943

Recorded in table 23 are data regarding graduates of those schools which do not meet the standards outlined by the House of Delegates of the American Medical Association and enforced by the Council on Medical Education and Hospitals who were registered as medical licentiates in the United States, Hawaii and Puerto Rico by written examination or endorsement of credentials from 1938 to 1943 inclusive.

In the six years shown, nineteen states, Hawaii and Puerto Rico registered 1,041 by examination and 78 by endorsement of credentials. In 1943 there were 239 registered by examination in six states, namely Illinois, Kentucky, Massachusetts, Missouri, Virginia and Wisconsin. Two states, Illinois and Massachusetts, registered 234 of the 239 reported. One physician was licensed by endorsement in Wisconsin. Another was examined in Hawaii.

The large numbers of unapproved graduates licensed in Illinois and Massachusetts result from the nature of the licensing laws in these states. However, 47 graduates of substandard schools have been licensed in other states in the past four years.

GRADUATES OF SCHOOLS OF OSTEOPATHY REGISTERED BY MEDICAL EXAMINING BOARDS, 1938-1943

The number of graduates of schools of osteopathy granted the legal right to practice medicine or surgery or both by the examining boards of fourteen states for a six year period is given in table 24. There were 813 such individuals registered since 1938, 696 by examination and 117 by endorsement of credentials.

In 1943 twelve states registered 227 by examination and 27 by recognition of their credentials, 254 in all.

This is a far larger figure than at any other time in recent years and is attributable to the 158 who were licensed in Ohio in 1943 under the new medical practice act. The numbers in Nebraska may be expected to increase in 1944 because of the new law in that state. The texts of the new laws in these states is as follows:

Nebraska.—The 1943 law, approved May 25 of that year, provides by section 20 (amending section 71-1403, Compiled Statutes of Nebraska, 1929) as follows:

"Any person now licensed to practice osteopathy in the state of Nebraska may, if application is made prior to July 1, 1948 and upon payment of the prescribed fee, take the first regular examination given after the application is made before the Board of Examiners in Medicine and Surgery. If such person is successful in passing such examination, he or she shall receive a license to practice medicine and surgery in the state of Nebraska; Provided, however, that any doctor of osteopathy, now licensed and practicing in the state of Nebraska and who is able to show satisfactory evidence of having taken and successfully passed the regular examination in medicine and surgery, shall be issued a license hereunder upon payment of the prescribed fee."

TABLE 24.—*Graduates of Schools of Osteopathy Registered by Medical Boards, 1938-1943*

	Examination						Reciprocity and Endorsement						
	1938	1939	1940	1941	1942	1943	1938	1939	1940	1941	1942	1943	Total
Colorado	18	22	15	2	9	9	0	0	0	0	0	0	75
Connecticut	0	1	0	0	0	5	0	0	0	0	0	0	6
Dist. Columbia	1	0	1	0	2	0	0	0	0	2	1	0	7
Indiana	2	4	7	3	4	2	0	0	1	3	2	3	31
Massachusetts	10	10	27	26	13	5	0	0	0	0	0	0	91
Nebraska	0	0	0	0	0	6	0	0	0	0	0	1	7
New Hampshire	2	0	2	0	0	0	1	0	2	0	1	1	9
New Jersey	46	45	47	32	9	18	0	0	0	0	0	0	197
Ohio	0	0	0	0	0	158	0	0	0	0	0	0	158
Oregon	1	1	0	2	1	0	1	1	1	2	5	3	18
Texas	22	19	20	13	17	18	37	17	1	1	1	2	168
Virginia	1	0	0	3	0	0	0	0	0	1	0	0	5
Wisconsin	0	0	1	2	5	6	3	0	0	0	1	16	34
Wyoming	0	0	1	0	0	0	1	2	0	0	2	1	7
Totals	103	102	121	83	60	227	43	20	5	9	13	27	813

Ohio.—Laws of 1943 (House Bill No. 112, approved April 29, 1943).

1. An osteopath who obtains a license under the 1943 act is authorized to practice "osteopathic medicine and surgery."

2. The new law provides in section 1274 as follows:

"An osteopathic physician who has successfully passed an examination in surgery before the state medical board and has received a certificate from said board authorizing him to practice osteopathy and surgery and has deposited said certificate with the probate judge as required by law is hereby authorized to continue the practice of osteopathy and surgery in this state. An osteopathic physician licensed to practice osteopathy in this state but who has not passed an examination in surgery before the state medical board is hereby authorized to continue the practice of osteopathy and minor and orthopedic surgery, but he shall not practice major surgery, which shall be defined to mean the performance of those surgical operations attended by mortality from the use of the knife or other surgical instruments, until he shall have passed the examination in surgery given by the state medical board. An osteopathic physician licensed to practice in this state at the effective date of this act shall not prescribe or administer drugs, except anesthetics and antiseptics, until such time as he shall obtain a certificate under the provisions of section 1274 of the General Code. The certificate of an osteopathic physician may be refused, revoked or suspended as provided in section 1275 of the General Code of Ohio."

PHYSICIANS EXAMINED ON THE BASIS OF CREDENTIALS OBTAINED IN COUNTRIES OTHER THAN THE UNITED STATES AND CANADA

The Council on Medical Education and Hospitals does not grade or classify medical schools outside the United States and Canada. It does not attempt to evaluate institutions which it is not in a position to visit to determine if they meet the minimum essentials of an acceptable medical school as outlined by the Council. This was true even before the war.

For a period of twelve years beginning in 1926 the credentials of physicians coming from abroad were verified by the Council through official correspondence with the medical schools directly or through the diplomatic services. Prior to the onset of the war in Europe it was necessary to discontinue this effort, and on the licensing boards rests the responsibility of evaluating the credentials presented by these graduates. In the 1942 edition of the American Medical Directory a symbol in the biographic data of foreign graduates indicates when the information given is the licensing board's record of the credential accepted as meeting the educational qualifications for licensure. The absence of the symbol may be interpreted to indicate that official verification is on file in the office of the Council.

The requirements of candidates for medical licensure in the United States, Alaska, Hawaii and Puerto Rico on the basis of credentials obtained in countries other than the United States and Canada are given in table 25. Eighteen states report that the holders of such credentials are not eligible for licensure. Eighteen states, Alaska, Hawaii and Puerto Rico require full citizenship and ten states naturalization papers as a condition precedent to taking the examination. California, Indiana and the District of Columbia make no reference to citizenship. In some states the recognition or non-

TABLE 25.—*Requirements of Candidates for Medical Licensure on the Basis of Credentials Obtained in Countries Other Than the United States and Canada*

	Admitted to Examination	Admitted by Endorsement of State License *	Citizenship	Basic Science Certificate	Internship in Hospital in United States	Further Medical Training	Examination Fee, Dollars	Other Requirements
Alabama	+	..	+	..	+	..	10	[1]
Arizona	Not accepted							
Arkansas (reg. and homeo. boards)	Not accepted							
California	+	+[21]	..	..	+[18]	+[18]	25	11
Colorado	+	..	1st P	+	..	..	25[4]	[3]
Connecticut (regular board)	+	..	1st P	+	..	..	25	..
Delaware (regular board)	+	..	+	..	+	..	25	[5,22]
District of Columbia	..	+[6]	..	+	+	..	25	19
Florida	+	..	+	+	..	+[7]	25	..
Georgia	+	..	+	..	..	+[7]	20	..
Idaho	+	..	+	..	+	..	25	..
Illinois	+	..	1st P	..	+	..	25	[8]
Indiana	+	+	..	..	..	+[7]	25	..
Iowa	+[10]	..	+	+	+[2]	+[2]	25	..
Kansas	+	..	+	..	..	..	25	11
Kentucky	Not accepted							
Louisiana (reg. and homeo. boards)	Not accepted							
Maine	+	+	+	..	+	..	27	11
Maryland (reg. and homeo. boards)	+	..	1st P	..	+[26]	..	25	19
Massachusetts	+	..	1st P	..	..	..	25	..
Michigan	+	+	+	+	+	+[7]	25	..
Minnesota	Not accepted							
Mississippi	+	..	+	..	+	..	10[3]	..
Missouri	+	+	+	..	..	..	15	..
Montana	Not accepted[25]							
Nebraska	+	+	+	+	..	..	25	..
Nevada	Not accepted							
New Hampshire	+	+[12]	+	..	+	..	20	..
New Jersey	+	+	+	..	+[17]	..	25	..
New Mexico	Not accepted							
New York	+	+	1st P	..	..	..	25	14
North Carolina	Not accepted							
North Dakota	+	..	+	..	+	..	25	11
Ohio	+	+	+	..	..	..	25	..
Oklahoma	Not accepted							
Oregon	Not accepted							
Pennsylvania	+	..	1st P	..	+	..	25	..
Rhode Island	+	..	1st P	+	+[16]	+[16]	20	13
South Carolina	Not accepted							
South Dakota	+	..	1st P	+	+[17]	..	20	..
Tennessee	Not accepted							
Texas	+	+	+	..	..	..	25	..
Utah	Not accepted							
Vermont	Not accepted[23]							
Virginia	+	..	+	15	15	+	25	24
Washington	+	..	1st P	+	+	+[7]	25	9
West Virginia	Not accepted							
Wisconsin	Not accepted							
Wyoming	Not accepted							
Alaska	+	+	+	..	+	..	25	..
Hawaii	+	..	+	..	+	..	25	12
Puerto Rico	+	+	+	..	+	..	25	..

* Refer to chart of "Reciprocity and Endorsement Policies" for further data.

1. Certificate of National Board of Medical Examiners and licensure in country in which school of graduation is located.
2. Internship or one year in medical school in United States.
3. Certificate of National Board of Medical Examiners.
4. For graduates of last five years; if more than five years $50.
5. Residence of one year in Delaware.
6. If similar privileges are accorded licentiates of District of Columbia by licensing agency of jurisdiction from which applicant comes.
7. Senior year in class A medical school in United States.
8. Graduates of European medical colleges after July 1, 1936, Switzerland excepted, shall not be eligible for licensure. Graduates prior to this date may be accepted for the regular written and clinical examination after completing rotating internships in approved hospitals in Illinois.
9. Enemy aliens not accepted.
10. Application must be filed six months prior to date of examination.
11. Licensed to practice medicine and surgery in country in which school of graduation is located, otherwise required to complete senior year in approved medical school in United States.
12. Diplomates of National Board of Medical Examiners eligible.
13. License to practice medicine and surgery in the country in which the school of graduation is located.
14. Matriculants after Jan. 1, 1940 not accepted.
15. At the discretion of the board.
16. Internship and graduate work.
17. Internship completed in foreign countries after July 1, 1934 not acceptable.
18. Rotating internship in approved hospital in the United States or completion of senior year in class A medical school in the United States.
19. These requirements apply also to graduates of Canadian schools.
20. Graduates from foreign medical colleges accepted if they present also a diploma from an approved medical school in the United States.
21. Provided standard was the same as California on the same date.
22. Degree from an American medical college acceptable to the Medical Council of Delaware required.
23. Diplomates of the National Board of Medical Examiners accepted. Citizenship required.
24. Very limited number contracting to practice in rural districts may be accepted.
25. Effective July 1, 1943.
26. Homeopathic board requires one year internship in homeopathic hospital in the United States.

TABLE 26.—*Physicians Examined on the Basis of Credentials Obtained in Countries Other Than the United States and Canada, 1943*

Marginal Number		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		23		24		25		26		Totals					
		California		Colorado		Connecticut		Idaho		Illinois		Indiana		Iowa		Kansas		Kentucky		Maine		Maryland		Massachusetts		Michigan		Mississippi		Missouri		Nebraska		New Jersey		New Mexico		New York		Ohio		Pennsylvania		South Dakota		Texas		Virginia		Washington		Hawaii							
		P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F						
	BELGIUM																																																							
1	Université Libre de Bruxelles	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	1
2	Université de Liége	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	2
3	Universiteit Gent	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	3
	CHINA																																																						
4	Hackett Medical College for Women	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	4
5	Pennsylvania Medical School, Shanghai	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	2	1	1	50.0	2	5
	CZECHOSLOVAKIA																																																					
6	Deutsche Universität, Prag	3	1	..	..	..	..	..	..	4	4	..	..	..	..	..	..	1	0	..	..	1	0	0	2	..	..	..	..	..	..	..	..	1	0	..	..	9	9	..	..	..	..	..	..	..	..	..	..	..	..	35	19	16	45.7	7	6
7	Masarykova Universita, Brno	1	0	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3	0	0.0	3	7
8	Universita Karlova, Praha	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	1	..	..	..	..	..	..	..	..	..	..	..	..	6	9	..	..	..	..	..	..	..	..	..	..	..	..	19	8	11	57.9	4	8
9	Univerzita Komenského, Bratislava	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	1	9
	DENMARK																																																					
10	Køpenhavns Universitet	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	10
	EL SALVADOR																																																					
11	Universidad de El Salvador	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	1	11
	ENGLAND																																																					
12	Kings College	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	1	0	1	100.0	1	12
13	Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	3	2	1	33.3	3	13
	ESTONIA																																																				
14	Université de Tartu	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	3	1	2	66.7	2	14
	FRANCE																																																				
15	Université d'Aix-Marseille	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	1	0	..	..	..	..	3	3	0	0.0	3	15
16	Université de Bordeaux	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	3	1	2	66.7	1	16
17	Université de Lyon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	..	..	..	..	..	..	2	0	..	..	..	..	4	4	0	0.0	2	17
18	Université de Montpellier	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	2	2	0	0.0	1	18
19	Université de Nancy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	3	1	2	66.7	1	19
20	Université de Paris	0	1	..	..	1	0	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	4	2	..	..	..	..	1	1	..	..	..	..	..	..	17	22	..	..	..	..	..	..	..	..	..	..	..	..	50	24	26	52.0	6	20
21	Université de Toulouse	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	3	2	1	33.3	1	21
	GERMANY																																																				
22	Albert-Ludwigs Universität, Freiburg	0	1	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	7	..	..	..	..	..	..	..	..	..	..	..	..	13	4	9	69.2	4	22
23	Albertus-Universität, Königsberg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	5	2	3	60.0	2	23
24	Christian-Albrechts-Universität, Kiel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	100.0	1	24
25	Eberhard-Karls-Universität, Tübingen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	4	2	2	50.0	2	25
26	Ernst-Moritz-Arndt Universität, Greifswald	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	1	26
27	Freidrich-Alexanders-Universität, Erlangen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	3	1	2	66.7	1	27
28	Freidrich-Wilhelms-Universität, Berlin	0	1	..	..	..	..	..	..	2	2	..	..	..	..	..	..	1	0	..	..	0	1	0	1	..	..	..	..	..	..	..	..	..	..	..	..	28	42	..	..	..	..	..	..	..	..	..	..	..	..	78	31	47	60.3	6	28
29	Georg August-Universität, Göttingen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	4	2	2	50.0	1	29
30	Hamburgische Universität	..	..	..	..	1	0	..	..	1	1	..	..	..	..	..	..	..	..	..	..	1	0	0	1	..	..	..	..	..	..	..	..	..	..	..	..	0	3	..	..	..	..	..	..	..	..	..	..	..	..	8	3	5	62.5	5	30
31	Hessische Ludwigs-Universität, Giessen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	1	31
32	Johann Wolfgang Goethe-Universität, Frankfurt-am-Main	..	..	..	..	0	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4	..	..	1	0	..	..	..	..	1	0	..	..	14	8	6	42.8	6	32
33	Julius Maximilians-Universität, Würzburg	1	1	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	4	..	..	..	..	..	..	..	..	..	..	..	..	16	9	7	43.8	4	33
34	Kaiser-Wilhelms-Universität, Strassburg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	5	2	..	..	..	..	..	..	..	..	..	..	..	..	8	6	2	25.0	2	34
35	Karl Franzens-Universität, Graz	1	0	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	6	5	1	16.7	4	35
36	Leopold-Franzens-Universität, Innsbruck	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	3	2	1	33.3	2	36
37	Ludwig-Maximilians-Universität, München	..	..	..	..	..	..	..	..	3	0	..	..	..	..	..	..	..	..	..	..	2	0	1	0	..	..	..	..	..	..	..	..	..	..	..	..	11	17	..	..	0	2	..	..	..	..	1	0	..	..	37	18	19	51.4	6	37
38	Medizinische Akademie Düsseldorf	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	38
39	Philipps-Universität, Marburg	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1	50.0	2	39
40	Rheinische Freidrich-Wilhelms-Universität, Bonn	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	3	3	50.0	3	40
41	Schlesische-Friedrich-Wilhelms-Universität, Breslau	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	6	5	..	..	..	..	1	0	..	..	..	..	1	0	..	..	15	8	7	46.7	5	41
42	Thüringische Landesuniversitat, Jena	1	0	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	7	3	4	57.1	4	42
43	Universität Heidelberg	..	..	..	..	..	..	1	0	1	0	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	5	5	1	0	..	..	..	..	..	..	..	..	..	..	16	9	7	43.8	5	43
44	Universität Köln	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	0	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	6	4	2	33.3	3	44
45	Universität Leipzig	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	0	2	..	..	..	..	..	..	1	0	1	0	..	..	3	4	..	..	..	..	..	..	..	..	..	..	..	..	12	6	6	50.0	5	45
46	Universität Rostock	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	3	2	1	33.3	2	46
47	Universität Wien	3	0	..	..	4	1	..	..	8	4	..	..	..	..	..	..	2	0	..	..	5	3	2	2	..	..	1	0	1	0	..	..	4	0	..	..	83	83	0	1	3	0	1	0	..	..	..	..	1	0	..	..	214	120	94	43.9	14	47
48	Vereiningten Friedrichs-Universität, Halle-Wittenberg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	..	..	..	..	..	..	..	..	..	..	..	..	5	3	2	40.0	1	48
	GREECE																																																					
49	National University of Athens	..	..	..	..	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..	..	..	0	1	0	1	..	..	..	..	..	..	..	..	..	..	0	1	0	1	..	..	..	..	..	..	1	0	..	..	7	1	6	85.7	6	49
	GUATEMALA																																																				
50	Universidad Nacional de Guatemala	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	0	0.0	1	50

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recognition of such individuals is by rule of the board, in others the provision is by statute. Ten states require a certificate from the state board of examiners in the basic sciences. In eighteen states, Alaska, Hawaii and Puerto Rico an internship in a hospital in the United States is a prerequisite. In addition one board may require a basic science examination and an internship in this country at the discretion of the board. In five states there is a requirement of a senior year's work in an approved medical school in the United States. Additional qualifications of individual states are given in footnotes.

TABLE 27.—*Physicians Examined on the Basis of Credentials Obtained in Countries Other Than the United States and Canada, 1930-1943*

Year	Number Examined	Passed	Percentage Failed
1930	167	92	44.9
1931	158	91	42.4
1932	182	96	47.3
1933	200	129	35.5
1934	285	170	40.2
1935	437	303	30.7
1936	588	382	35.0
1937	920	637	30.8
1938	1,164	716	38.5
1939	1,691	839	50.4
1940	2,088	948	54.7
1941	1,717	698	59.2
1942	1,630	890	45.4
1943	1,031	518	49.8
Totals	12,258	6,509	46.9

In table 26 are figures relating to physicians with foreign credentials who were examined for medical licensure in the United States and Hawaii. The figures represent both American and foreign born physicians educated abroad. Ninety-eight faculties of medicine and two licensing corporations of twenty-one European countries and six other countries are represented. There were 1,031 examined by twenty-five states and Hawaii, of whom 518 passed and 513, 49.8 per cent, failed. Graduates of the University of Vienna represented the largest group, 214, who were examined in fourteen states with a percentage of 43.9 failures. Six states examined 78 graduates of the University of Berlin, 60.3 per cent of whom failed. The greatest number of foreign graduates examined by any one state was 762 in New York, of whom 361 passed and 401, 52.6 per cent, failed. No other state tested more than 54 of these physicians. Fewer than 5 were examined by twelve states and Hawaii. The percentage of failures in fifty-nine schools was 50 or higher.

Totals for the fourteen years 1930-1943 are presented in table 27. In this period 12,258 were examined, of whom 6,509 passed and 46.9 per cent failed. In 1943 there were 599 fewer examined than in the previous year, yet the percentage of failures was higher. In 1940 the greatest number, 2,088, were examined. In that year 948 secured licenses. The highest percentage of failures occurred in 1941, when 59.2 per cent failed. At no time in this fourteen year period did fewer than 30.7 per cent fail.

For a period of time there were large annual increases in foreign graduates examined, so that in 1940 there were over three times as many tested as in 1936. Since 1940 there have been annual decreases. The number last year was about half that of 1940, although it was still almost double the 1936 figure.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Seventeen states and the District of Columbia have adopted by legislative action basic science requirements underlying the practice of the healing art. A basic science law ignores all medical dogmas and cults. It establishes an impartial, nonsectarian board of examiners in the basic sciences—anatomy, physiology, pathology, chemistry and bacteriology—and requires that each person who desires to treat human beings appear before that board and demonstrate his knowledge. The basic science boards are distinct from the licensing boards. A certificate of proficiency in the basic sciences does not authorize the possessor to practice the healing art; it enables him only to apply for a license so to practice, whether the license is to be issued after written examination or on the basis of endorsement of credentials or reciprocity. Some states provide for reciprocal agreements, although in most instances the certificate is awarded only after examination.

Connecticut and Wisconsin were the first states to adopt such legislation. Laws were passed in these states in 1925. In 1943 Tennessee was added to the group. Boards were operative during 1943 in Arizona, Arkansas, Colorado, Connecticut, the District of Columbia, Florida, Iowa, Michigan, Minnesota, Nebraska, New Mexico, Oklahoma, Oregon, Rhode Island, South Dakota, Tennessee, Washington and Wisconsin. These eighteen states, together with the year of enactment of the law, are recorded in table 28.

In addition to the basic science subjects named, candidates are examined in some states also in diagnosis, hygiene and public health. These subjects are specified by statute and may not be changed by the board. Shown in table 29 are the subjects in which examinations are conducted by the respective states and the District of Columbia. All eighteen boards examine in anatomy, pathology and physiology, sixteen in chemistry, fourteen in bacteriology, eight in hygiene, two in diagnosis and one in public health.

The results of examinations held in these states or certificates issued on the basis of endorsement during the calendar year 1943 are presented in tables 30 and 31, as reported by the respective boards. Applying for a basic science certificate, the candidate is not required to mention whether he intends to practice medicine, osteopathy or chiropractic. However, by checking the biographic and medical student records of the American Medical Association and various directories, it is possible to determine the profession of the majority of candidates. Thus it has been possible to tabulate the figures in four groups, namely physicians and medical students, osteopaths, chiropractors and unclassified applicants. The latter category includes those for whom it was not possible to determine the profession represented. Dentists, osteopaths, chiropractors and naturopaths are probably included in this group.

TABLE 28.—*States Having Basic Science Laws and Year of Enactment*

Arizona	1936	Nebraska	1927
Arkansas	1929	New Mexico	1941
Colorado	1937	Oklahoma	1937
Connecticut	1925	Oregon	1933
District of Columbia	1929	Rhode Island	1940
Florida	1939	South Dakota	1939
Iowa	1935	Tennessee	1943
Michigan	1937	Washington	1927
Minnesota	1927	Wisconsin	1925

A total of 2,741 candidates was examined during 1943 (table 30). Of this number 2,330 were physicians and medical students, 165 were osteopaths, 21 were chiropractors and 203 were placed in the unclassified group. Of all applicants 15.8 per cent failed. Of the physicians and medical students examined 10 per cent failed, osteopaths 49.6 per cent, chiropractors 57.1 per cent and unclassified 41.4 per cent. Among those who passed there were 2,098 physicians and medical students, 83 osteopaths, 9 chiropractors and 119 unclassified. The basic science board of Tennessee examined the greatest number of applicants, 513, representing 509 physicians and medical students and 4 others. Of those examined 6.2 per cent failed. Iowa, with the second greatest number of examinees, 325, had 33.5 per cent failures. Represented at examinations in this state were 156 physicians or medical students, 85 osteopaths and 84 others. The District of Columbia reported no failures, examining 10 physicians.

Osteopaths were tested in Arkansas, Colorado, Connecticut, Florida, Iowa, Michigan, Minnesota, Nebraska, New Mexico, Oregon, Rhode Island, South Dakota, Washington and Wisconsin. Chiropractors

TABLE 29.—*Subjects Included in Basic Science Examinations*

	Examinations Required in							
	Anatomy	Bacteriology	Chemistry	Diagnosis	Hygiene	Pathology	Physiology	Public Health
Arizona	+	+	+	..	+	+	+	..
Arkansas	+	+	+	..	..	+	+	..
Colorado	+	+	+	..	..	+	+	..
Connecticut	+	..	..	+	+	+	+	..
Dist. Columbia	+	+	+	..	..	+	+	..
Florida	+	+	+	..	..	+	+	..
Iowa	+	+	+	..	+	+	+	..
Michigan	+	+	+	..	+	+	+	+
Minnesota	+	+	+	..	+	+	+	..
Nebraska	+	+	+	..	+	+	+	..
New Mexico	+	+	+	..	..	+	+	..
Oklahoma	+	+	+	..	..	+	+	..
Oregon	+	..	+	..	+	+	+	..
Rhode Island	+	+	+	..	..	+	+	..
South Dakota	+	+	+	..	..	+	+	..
Tennessee	+	+	+	..	..	+	+	..
Washington	+	..	+	..	+	+	+	..
Wisconsin	+	..	..	+	..	+	+	..

appeared for examination in six states—Connecticut, Florida, New Mexico, Rhode Island, Washington and Wisconsin.

It is the policy of the Arizona board of examiners in the basic sciences to omit the names of applicants who fail examinations, and the law does not require the board to record the professional school of graduation of the examinees. Failures for this state, therefore, are recorded only in the total column.

Eleven states issued 382 certificates by reciprocity, endorsement or waiver, and the boards of all states granted 2,309 certificates after examination. Altogether 2,691 certificates of proficiency were issued. The number of successful applicants by both of these methods are recorded in table 31. Among the successful candidates were 2,394 physicians, 137 osteopaths, 9 chiropractors and 151 unclassified persons. Wisconsin certified 78 without examination, the greatest number, of whom 44 were physicians, 24 osteopaths and 10 unclassified. Arizona, Florida and Washington have no reciprocal relations. None were certified without examination in Connecticut, New Mexico, Oklahoma and Rhode Island. No state certified a chiropractor without an examination. Nine states certified osteopaths without examinations.

Altogether, 2,691 candidates received basic science certificates in seventeen states and the District of Columbia in 1943, ranging from 7 in South Dakota to 533 in Tennessee.

TABLE 30.—*Applicants Examined, 1943*

	Physicians and Medical Students		Osteopaths		Chiropractors		Unclassified		Total Examined	Passed	Failed	Percentage Failed
	P	F	P	F	P	F	P	F				
Arizona	30	0	0	0	0	0	2	0	54	32	22*	40.0
Arkansas	72	3	1	0	0	0	0	0	76	73	3	3.9
Colorado	75	3	2	1	0	0	4	8	93	81	12	12.9
Connecticut	98	3	5	1	1	1	0	0	109	104	5	4.6
District of Columbia	10	0	0	0	0	0	0	0	10	10	0	0.0
Florida	151	38	4	1	3	5	5	0	207	163	44	21.3
Iowa	131	25	44	41	0	0	41	43	325	216	109	33.5
Michigan	213	47	9	17	0	0	7	8	301	229	72	23.9
Minnesota	238	20	5	7	0	0	5	5	280	248	32	11.4
Nebraska	113	24	0	1	0	0	5	0	143	118	25	17.5
New Mexico	15	1	1	0	1	0	0	0	18	17	1	5.6
Oklahoma	129	3	0	0	0	0	4	0	136	133	3	2.2
Oregon	78	14	1	3	0	0	3	5	104	82	22	21.2
Rhode Island	29	1	1	0	0	3	18	3	55	48	7	12.7
South Dakota	3	1	1	0	0	0	0	1	6	4	2	33.3
Tennessee	477	32	0	0	0	0	4	0	513	481	32	6.2
Washington	83	15	9	9	0	3	0	0	119	92	27	22.7
Wisconsin	153	2	0	1	4	0	21	11	292	178	14	4.8
Totals—Examined	2,330*		165		21		203		2,741			
Totals—Passed	2,098		83		9		119			2,309		
Totals—Failed	232		82		12		84				432	
Percentage Failed	10.0		49.6		57.1		41.4					15.8

* School of practice undeterminable, since names of failures not supplied.

In table 32 is included the number of candidates examined and certified by basic science boards for each year since and including 1927. In 1928, when five boards were functioning, there were 646 physicians

TABLE 31.—*Certificates Issued by Examination, Reciprocity and Endorsement, 1943*

	Examination					Reciprocity, Endorsement or Waiver					
	Physicians and Medical Students	Osteopaths	Chiropractors	Unclassified	Totals	Physicians and Medical Students	Osteopaths	Chiropractors	Unclassified	Totals	Registered
Arizona	30	0	0	2	32	0	0	0	0	0	32
Arkansas	72	1	0	0	73	3	1	0	2	6	79
Colorado	75	2	0	4	81	21	13	0	4	38	119
Connecticut	98	5	1	0	104	0	0	0	0	0	104
Dist. Columbia	10	0	0	0	10	67	0	0	0	67	77
Florida	151	4	3	5	163	0	0	0	0	0	163
Iowa	131	44	0	41	216	19	3	0	3	25	241
Michigan	213	9	0	7	229	11	0	0	0	11	240
Minnesota	238	5	0	5	248	67	1	0	2	70	318
Nebraska	113	0	0	5	118	7	1	0	1	9	127
New Mexico	15	1	1	0	17	0	0	0	0	0	17
Oklahoma	129	0	0	4	133	0	0	0	0	0	133
Oregon	78	1	0	3	82	9	6	0	8	23	105
Rhode Island	29	1	0	18	48	0	0	0	0	0	48
South Dakota	3	1	0	0	4	2	1	0	0	3	7
Tennessee	477	0	0	4	481	46	4	0	2	52	533
Washington	83	9	0	0	92	0	0	0	0	0	92
Wisconsin	153	0	4	21	178	44	24	0	10	78	256
Totals	2,098	83	9	119	2,309	296	54	0	32	382	2,691

examined, of whom 9.3 per cent failed, and 59 other practitioners, of whom 47.5 per cent failed. In 1943, by comparison, 2,330 physicians were examined, of whom 10 per cent failed, and 389 other practitioners with 45.8 per cent failures. No definite trends can be detected through the years in the percentage of failures

in either the "Physician and Medical Students" group or the "Other Practitioner" category.

In this seventeen year period 17,637 physicians and medical students were examined, of whom 15,535 were successful in their examinations, while in the same period 2,672 other practitioners took the test, and 1,326 were successful. Of the physicians examined during this period 11.9 per cent failed to pass, while 50.4 per cent of the other practitioners failed to pass. In this seventeen year period 3,372 physicians and 657 others have been certified without complete examination.

Altogether in the period shown 20,890 certificates have been granted by basic science boards, of whom 18,907 were physicians and medical students; 1,983 were other practitioners.

Basic science legislation has been enacted in an attempt to provide a means of insuring that all applicants seeking licensure to care for sick and injured persons shall first possess a reasonable knowledge of the sciences fundamental to the healing art. The figures shown clearly indicate that in states that have enacted basic science laws a substantial proportion of "other practitioners" are so incompetent that nonmedical basic science boards refuse to permit them to appear for examination before the professional boards of the state.

TABLE 32.—*Total Candidates, 1927-1943*

	Number of Boards	Physicians and Medical Students						Other Practitioners					
		Examined	Passed	Failed	Percentage Failed	Endorsement	Total Certified	Examined	Passed	Failed	Percentage Failed	Endorsement	Total Certified
1927	5	305	279	26	8.5	26	305	22	15	7	31.8	1	16
1928	5	646	586	60	9.3	19	605	59	31	28	47.5	0	31
1929	7	668	610	58	8.7	75	685	66	31	35	53.0	0	31
1930	7	685	606	79	11.5	118	724	78	30	48	61.5	4	34
1931	7	680	586	94	13.8	141	727	107	48	59	55.1	0	48
1932	7	657	590	67	10.2	106	696	78	44	34	43.6	12	56
1933	8	601	527	74	12.3	121	648	60	30	30	50.0	10	40
1934	9	815	725	90	11.0	127	852	51	26	25	49.0	11	37
1935	10	882	761	121	13.7	110	871	74	33	41	55.4	4	37
1936	10	1,082	801	141	13.7	230	1,121	66	26	40	60.6	13	39
1937	12	1,231	1,061	170	13.8	192	1,253	113	41	72	63.7	10	51
1938	12	1,168	1,026	142	12.2	267	1,293	158	70	88	55.7	26	96
1939	14	1,141	1,013	128	11.2	727	1,740	218	97	121	55.5	294	391
1940	16	1,303	1,140	163	12.5	324	1,464	280	153	127	43.9	22	175
1941	17	1,768	1,560	208	11.8	280	1,840	356	191	165	46.3	73	264
1942	17	1,725	1,476	249	14.4	213	1,689	497	249	248	49.9	91	340
1943	18	2,330	2,098	232	10.0	296	2,394	380	211	178	45.8	86	297
Totals		17,637	15,535	2,102	11.9	3,372	18,907	2,672	1,326	1,346	50.4	657	2,083

A federation of basic science boards has recently been organized which had its inception in February 1943 at the annual meeting of the Federation of State Medical Boards held in connection with the Annual Congress on Medical Education and Licensure. This organized effort on the part of the basic science boards is worthy of commendation, since it will provide for collaboration of mutual problems and coordination of ideas. It is hoped that it will develop in a manner similar to the organization of state medical boards and will have the support and cooperation of the medical profession, particularly those who are charged with the responsibility of administering state laws. The present officers of the new organization are: president, Orin E. Madison, Ph.D., Michigan board, Detroit; vice president, Charles D. Byrne, Ed.D., Oregon board, Eugene; secretary-treasurer, Charles Carter, D.Sc., Iowa board, Fairfield; executive committee, John S. Latta, Ph.D., Nebraska board, Omaha, and Rev. Nicholas H. Serror, O.P., Rhode Island board, Providence.

NATIONAL BOARD OF MEDICAL EXAMINERS

The licensing authorities of forty-five states, the District of Columbia and the territories and possessions of Alaska, Hawaii and Puerto Rico and the Canal Zone accept the Certificate of the National Board of Medical Examiners as an adequate qualification for a medical license. Only the three states of Florida, Texas and Wisconsin do not accept such certification. One state—Louisiana—was added to the list of states recognizing the National Board credential in 1943. The licensing board of that state ruled that it will exempt diplomates from the state examination if they have been licensed in some other state with which Louisiana reciprocates. Additional examinations are required of those who hold the certificate of the National Board by some of the states recognizing the certificate. These are oral examinations in Connecticut, Illinois, Maine, Montana, Rhode Island and Wyoming, and a brief supplemental examination in Michigan. Pennsylvania requires a rotating internship. States, territories and possessions endorsing the certificate of the National Board are listed in table 33.

TABLE 33.—*States Endorsing Certificates of the National Board of Medical Examiners*

Alabama	Illinois	Montana	Puerto Rico
Alaska	Indiana	Nebraska	Rhode Island
Arizona	Iowa	Nevada	South Carolina
Arkansas	Kansas	New Hampshire	South Dakota
California	Kentucky	New Jersey	Tennessee
Canal Zone	Louisiana	New Mexico	Utah
Colorado	Maine	New York	Vermont
Connecticut	Maryland	North Carolina	Virginia
Delaware	Massachusetts	North Dakota	Washington
Dist. Columbia	Michigan	Ohio	West Virginia
Georgia	Minnesota	Oklahoma	Wyoming
Hawaii	Mississippi	Oregon	
Idaho	Missouri	Pennsylvania	

The examinations of the National Board in the basic sciences are accepted in lieu of the examinations in these subjects given by the basic science boards of Connecticut, Iowa, Minnesota, Nebraska and the District of Columbia.

Diplomates are accorded recognition by the Examining Board in England, the Triple Qualification Board of Scotland, the Conjoint Board in Ireland, and the licensing bodies in Lebanon, South Africa, Spain and Turkey. They are also admitted without further examination to the Mayo Foundation (Graduate School of the University of Minnesota) and are exempt from

TABLE 34.—*Examinations, 1916-1921*

Date		Total Examined	Failed	Percentage Failed
October	1916	10	5	50.0
June	1917	12	3	25.0
October	1917	28	6	21.4
January	1918	20	2	10.0
April	1918	23	5	21.7
December	1918	16	1	6.3
June	1919	52	1	1.9
February	1920	48	12	25.0
May	1920	60	14	23.3
February	1921	16	5	31.3
June	1921	40	3	7.5
Total		325	57	17.5

some of the qualifications required by the United States Public Health Service.

Graduates of approved medical schools in the United States are eligible for certification. Graduates of university medical schools of Great Britain and Ireland are admitted to the examination provided these graduates have been licensed to practice in the country in which the school attended is located.

In consideration of the reduction in the length of the internship from one year to nine months, the Executive Committee of the National Board at its meeting on Oct. 25, 1943 resolved:

> During the war period, the National Board of Medical Examiners will admit to its Part III examination those candidates who have completed nine months of internship training in an approved hospital, but the board will withhold its certificate until these candidates have completed three additional months of training as interns or residents in approved hospitals, or three months of active duty in the medical department of the armed forces.

TABLE 35.—*Examinations in Part I in 1942 and 1922-1943*

Date	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
January	269	157	82	30	16.0
March	842	389	382	71	15.4
August	955	602	247	106	15.2
November	590	293	251	46	13.6
Totals	2,656	1,441	962	253	14.9
1922	388	263	58	67	20.3
1923	507	349	77	81	18.8
1924	591	415	69	107	20.5
1925	608	400	50	158	28.3
1926	625	436	104	85	16.3
1927	702	452	159	91	16.8
1928	843	533	231	79	12.9
1929	1,096	675	331	90	11.8
1930	1,260	801	345	114	12.5
1931	1,277	755	425	97	11.4
1932	1,307	847	371	89	9.5
1933	1,234	782	316	136	14.8
1934	1,241	809	347	85	9.5
1935	1,264	785	410	69	8.1
1936	1,344	858	363	123	12.5
1937	1,435	871	415	149	14.6
1938	1,654	986	508	160	15.0
1939	1,733	1,048	460	225	17.7
1940	1,653	1,069	375	209	16.4
1941	1,640	1,087	346	207	16.0
1942	1,865	1,202	471	192	13.8
1943	2,656	1,441	962	253	14.9
Totals	26,923	16,864	7,193	2,866	14.5

The National Board was founded in 1915. From October 1916 to Dec. 31, 1921 eleven examinations were held and 268 candidates were certified. The results of each examination during this period are given in table 34. These data, together with subsequent tabulations with the addition of current figures, have been presented annually in THE JOURNAL for twenty-six consecutive years. These statistics are based on official reports received periodically. The awarding of certificates to candidates forms a part of their biographic records maintained by the American Medical Association.

Since 1922 the examination has been divided into three parts, which must be taken in the following sequence: Part I, a written examination in each of six fundamental sciences; Part II, a written examination in five major clinical subjects; Part III, an oral clinical and practical examination in six major clinical subjects and their component subjects or subdivisions. During 1943 four examinations were given in Parts I and II in various approved medical schools. Examinations in Part III are given under the direction

TABLE 36.—*Examinations in Part II in 1942 and 1922-1943*

Date	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
January	306	301	0	5	1.6
March	575	551	0	24	4.2
August	160	155	0	5	3.1
November	818	796	0	22	2.7
Totals	1,859	1,803	0	56	3.0
1922	109	90	0	19	17.4
1923	192	170	2	20	10.5
1924	267	227	0	40	15.0
1925	342	309	0	33	9.6
1926	381	334	1	46	12.1
1927	361	314	1	46	12.8
1928	410	371	1	38	9.3
1929	465	399	19	47	10.5
1930	620	543	7	70	11.4
1931	719	630	2	87	12.1
1932	732	674	0	58	7.9
1933	714	651	0	63	8.8
1934	633	583	0	50	7.9
1935	689	620	0	69	10.0
1936	768	716	2	50	6.5
1937	855	803	1	51	6.0
1938	861	815	0	46	5.3
1939	938	884	0	54	5.8
1940	1,028	963	9	56	5.5
1941	1,001	954	1	46	4.6
1942	1,072	1,031	0	41	3.8
1943	1,859	1,803	0	56	3.0
Totals	15,016	13,884	46	1,086	7.3

of local subsidiary boards. One additional subsidiary board was established in 1943. There are at present twenty-four such centers.

A candidate is eligible for Part I who has completed successfully the first two years in an approved medical

TABLE 37.—*Examinations in Part III, 1922-1943*

	Total Examinations	Passed	Failed	Percentage Failed
1922	22	22	0	0.0
1923	82	81	1	1.2
1924	126	120	6	4.8
1925	219	206	13	5.9
1926	255	243	12	4.7
1927	293	272	21	7.2
1928	322	306	16	5.0
1929	352	337	15	4.3
1930	420	401	19	4.5
1931	437	419	18	4.1
1932	550	522	28	5.1
1933	551	526	25	4.5
1934	567	548	19	3.4
1935	598	578	20	3.3
1936	576	547	29	5.0
1937	668	630	38	5.7
1938	706	682	24	3.4
1939	770	729	41	5.3
1940	791	770	21	2.7
1941	910	885	25	2.7
1942	1,053	1,040	13	1.2
1943	1,230	1,213	17	1.4
Totals	11,498	11,077	421	3.7

school. Candidates are required to take all six subjects of this part at a regular examination period unless entitled to take an incomplete examination. An incomplete examination is allowed candidates taking Part I

at the end of their second medical year in schools whose third year curriculums include courses in one or two subjects of this part. Examination in these subjects may be given after the candidate has completed them in his medical school.

A candidate is eligible for Part II who has completed his four year medical course and has already taken Part I.

Four examinations were scheduled in Parts I and II in 1943 to coincide with the graduation dates of medical schools under the accelerated curriculum. The figures in tables 35, 36 and 37 cover the details of each examination given during a calendar year and include some who fail and are reexamined during the same year and those who pass Parts I and II in the same year. They therefore represent examinations conducted and not individuals examined.

In 1943, 2,656 examinations were given in Part I; 1,441 were passed and 253, 14.9 per cent were failed.

TABLE 38.—*Parts I, II and III, Excluding Duplications, 1922-1943*

	Total Examined	Passed	Incomplete	Failed	Percentage Failed
1922	525	381	58	86	18.4
1923	775	594	79	102	14.7
1924	978	756	69	153	16.8
1925	1,167	915	50	202	18.1
1926	1,161	930	105	126	11.9
1927	1,248	947	142	159	14.4
1928	1,430	1,101	211	118	9.7
1929	1,723	1,280	319	124	8.8
1930	2,044	1,547	322	175	10.2
1931	2,218	1,632	410	176	9.7
1932	2,342	1,850	355	137	6.9
1933	2,277	1,806	280	191	9.6
1934	2,261	1,801	330	130	6.7
1935	2,368	1,831	408	129	6.6
1936	2,517	1,989	353	175	8.1
1937	2,735	2,151	397	187	8.0
1938	2,992	2,308	493	191	7.6
1939	3,221	2,476	443	302	10.9
1940	3,188	2,597	363	228	8.1
1941	3,318	2,749	332	237	7.9
1942	3,607	3,014	391	202	6.3
1943	4,513	3,670	606	237	6.1
Totals	48,608	38,325	6,516	8,767	8.9

During the year also 962 incomplete examinations were given. In Part II, 1,859 examinations were given. Fifty-six of this number, 3.0 per cent, were failures. Incomplete examinations are only rarely given in this part. There were none last year.

Since 1922 there have been 26,923 examinations given in Part I and 15,016 in Part II. During this twenty-two year period 16,864 were successful tests in Part I and 13,884 in Part II. The percentage of failures for these two parts was 14.5 in Part I and 7.3 in Part II. Owing in large part to the accelerated curriculums of medical schools the number of examinations given in these two parts in 1943 greatly increased.

The final examination in Part III is given when the candidate has received his M.D. degree and has satisfactorily completed an internship. In 1943, 1,230 examinations were given, 17 of which (1.4 per cent) were unsuccessful tests. The results of examinations for this part during twenty-two years are given in table 37 and indicate that 11,498 were tested, of whom 11,077 were granted certificates. The percentage of failures was 3.7. Since 1916, 11,345 certificates have been awarded.

The tabulations thus far presented represent examinations given. The number of individuals tested during any one year is recorded for the twenty-two year period in table 38. The classification as passed or failed in cases in which more than one examination has been taken in a given year was based on the results of the last examination. For example, if in 1943 a candidate passed Part I but later in 1943 failed Part II, he is computed in the tabulation as a failure. There were 4,513 individuals who were tested in at least one of the examinations of the National Board in 1943. The trend has been steadily upward, and last year the num-

TABLE 39.—*Diplomates from Individual Medical Schools, 1943*

	Certificates Awarded		Certificates Awarded
Univ. of Arkansas	1	Albany Med. Coll.	35
Coll. of Med. Evangelists	52	Columbia Univ.	66
Stanford Univ.	5	Cornell Univ.	26
Univ. of California	1	Long Island Coll. of Med.	20
Univ. of So. California	3	New York Med. Coll.	79
Univ. of Colorado	3	New York Univ.	39
Yale Univ.	47	Syracuse Univ.	7
George Washington Univ.	48	Univ. of Buffalo	62
Georgetown Univ.	57	Univ. of Rochester	13
Howard Univ.	3	Duke Univ.	85
Loyola Univ.	1	Univ. of Cincinnati	1
Northwestern Univ.	21	Univ. of Oregon	9
Univ. of Chicago	5	Hahnemann Med. Coll.	2
Univ. of Illinois	19	Jefferson Med. Coll.	7
Indiana Univ.	2	Temple Univ.	12
State Univ. of Iowa	25	Univ. of Pennsylvania	17
Univ. of Louisville	2	Woman's Med. Coll.	7
Louisiana State Univ.	1	Meharry Med. Coll.	1
Tulane Univ.	7	Univ. of Tennessee	1
Johns Hopkins Univ.	9	Vanderbilt Univ.	4
Univ. of Maryland	5	Univ. of Vermont	14
Boston Univ.	64	Med. Coll. of Virginia	1
Harvard Med. School	133	Univ. of Virginia	1
Tufts Coll. Med. School	109	Marquette Univ.	7
Univ. of Michigan	1	Laval Univ.	1
Univ. of Minnesota	7	McGill Univ.	4
St. Louis Univ.	10	Queen's Univ.	1
Washington Univ.	7	Univ. of Toronto	2
Creighton Univ.	4	Extinct medical school	7
Univ. of Nebraska	1	Foreign	29
		Total	1,213

TABLE 40.—*Licenses Granted on the Basis of National Board Certificates, 1943*

Alabama	4	New Hampshire	3
Arizona	3	New Jersey	25
California	51	New Mexico	2
Colorado	10	New York	215
Connecticut	42	North Carolina	9
District of Columbia	33	Ohio	13
Georgia	1	Oklahoma	4
Idaho	2	Oregon	5
Illinois	17	Pennsylvania	20
Indiana	2	Rhode Island	9
Iowa	4	South Carolina	1
Kansas	2	South Dakota	1
Kentucky	2	Tennessee	7
Maine	1	Utah	2
Maryland	9	Vermont	3
Massachusetts	94	Virginia	4
Michigan	7	Washington	6
Minnesota	13	West Virginia	1
Mississippi	3	Hawaii	2
Missouri	12	Total	651
Nebraska	2		
Nevada	2		

ber of candidates was 906 greater than in the previous year. A total of 48,608 individuals was examined in one or more of the annual examinations in the twenty-two years shown, of whom 38,325 passed, 6,516 took incomplete examinations and 3,767, or 8.9 per cent, failed.

The 1,213 physicians certified as Diplomates last year represented graduates (table 39) from fifty-four existing and one extinct medical school in the United States, four in Canada and twenty-nine graduates of faculties of medicine abroad.

In 1943, 651 Diplomates were granted licenses to practice medicine on the basis of their National Board certificate in thirty-nine states, the District of Columbia and Hawaii. These facts can be noted in table 40. Since the National Board was formed, 8,223 physicians have been licensed to practice medicine on the basis of credentials from the board. In this same period 11,345 received the certificate of the board. It would appear that 3,122 have not used the credential as a licensing medium.

EXAMINING BOARDS IN THE MEDICAL SPECIALTIES

Examining boards leading to certification have been organized in fifteen specialties, as follows:

Anesthesiology
Dermatology and Syphilology
Internal Medicine
Neurologic Surgery
Obstetrics and Gynecology
Ophthalmology
Orthopedic Surgery
Otolaryngology
Pathology
Pediatrics
Plastic Surgery
Psychiatry and Neurology
Radiology
Surgery
Urology

In 1934 the Council on Medical Education and Hospitals was instructed by the House of Delegates of the American Medical Association to formulate minimal essentials deemed necessary for certification as a specialist. Prior to 1934 there were five boards functioning. Other boards were later organized, and since 1940 fifteen boards have been in operation. All these boards are fully approved by the Council.

The Council's "Essentials of Approved Examining Boards in Medical Specialties" outlines the type of organization and the responsibilities of such boards as well as the minimum qualifications deemed necessary for the certification of a specialist. Such qualifications include graduation from an approved medical school, completion of an internship in a hospital approved by the Council, three additional years of special training in institutions approved by the Council and the board concerned, and a further period of two years devoted to specialty study and/or practice.

The Advisory Board for Medical Specialties was organized in 1933-1934 to coordinate graduate education and certification of medical specialists in the United States and Canada. This board reports directly to its member groups, and functions in close cooperation with the Council on Medical Education and Hospitals of the American Medical Association.

The American Board of Internal Medicine by special examination certifies specialists in allergy, cardiovascular disease, gastroenterology and tuberculosis. Similarly the American Board of Surgery certifies specialists in proctology. Regular board certification is a prerequisite for certification in the subspecialty.

The number of certificates awarded prior to March 1, 1943 and the number certified from that date to March 30, 1944, respectively, appears in table 41. On March 1, 1943 there were 21,699 physicians certified by the fifteen specialty boards, and in the following year 1,578 were certified. On March 30, 1944 a total of 23,277 certificates had been issued.

In the subspecialties 728 have been certified, namely allergy 71, cardiovascular disease 310, gastroenterology 149, proctology 70 and tuberculosis 128.

In internal medicine 3,263 have been certified and in general surgery 2,342. However, the greatest number in any one specialty certified were in otolaryngology. In this specialty 3,737 have received the board's certificate since the organization of this board in 1924. The board in ophthalmology, organized in 1917 and the oldest board in existence, has to date certified 2,336. There has been a 200 per cent increase in the past year in the number certified in neurologic surgery, which was formulated in 1940 and is the last board organized.

The 9-9-9 program curtails the training of numbers of young physicians desiring specialty certification. Under this wartime program the various boards will probably allow credit for the actual time spent by the candidate in house officer training in approved hospitals.

The majority of the boards will grant some credit for military service which will compensate in part for the interruption of the graduate training of physicians by military exigencies. The policies adopted by the specialty boards vary from the granting of an indefinite amount of credit, to be determined by an evaluation of the experience of individual applicants, to full credit for work done in the surgical division of a regularly constituted army or naval hospital. Six boards reported that, since March 1, 1943, 145 physicians have received military service credit to complete their qualifications for certification.

Prospective applicants who are in military services should obtain a copy of the "Record of Professional Assignments for Prospective Applicants for Certification by Specialty Boards" from the secretary of any board. This booklet describes procedures pertaining to military credit and will enable prospective applicants and candidates to keep an accurate account of work done in the military service and will constitute part of the credentials to be submitted to the board on application for certification.

TABLE 41.—*Approved Examining Boards in Medical Specialties*

Key No.	Name of Board	Year of Incorporation	Certificates Awarded Total Issued to March 1, 1943	Certificates Awarded Total Issued to March 30, 1944
1.	American Board of Pediatrics	1933	2,058	2,220
2.	American Board of Psychiatry and Neurology	1934	1,536	1,716
3.	American Board of Orthopaedic Surgery	1934	819	860
4.	American Board of Dermatology and Syphilology	1932	644	680
5.	American Board of Radiology	1934	1,881	2,012
6.	American Board of Urology	1935	942	983
7.	American Board of Obstetrics and Gynecology	1930	1,656	1,764
8.	American Board of Internal Medicine	1936	2,905	3,263
9.	American Board of Pathology	1936	954	1,012
10.	American Board of Ophthalmology	1917	2,198	2,336
11.	American Board of Otolaryngology	1924	3,570	3,737
12.	American Board of Surgery	1937	2,144	2,342
13.	American Board of Anesthesiology	1938	188	231
14.	American Board of Plastic Surgery	1937	154	160
15.	American Board of Neurological Surgery	1940	50	149
			21,699	23,277

Certification in the subspecialties: By the American Board of Internal Medicine: allergy 71, cardiovascular disease 310, gastroenterology 149, tuberculosis 128, total 658. By the American Board of Surgery: proctology 70. Total certified in the subspecialties, 728. These figures are included in the above tabulation.

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SATURDAY, MAY 13, 1944

MEDICAL LICENSURE

The forty-second annual compilation of data on medical licensure is presented in this State Board Number by the Council on Medical Education and Hospitals. These important statistics, covering the calendar year 1943, were furnished by medical and basic science examining boards in the United States, territories and possessions, the National Board of Medical Examiners, the various American boards in the specialties, and other agencies. The Council and THE JOURNAL greatly appreciate the cooperation of these agencies in making available this material. Besides publication in THE JOURNAL, a reprint edition is available and given wide circulation. Reprints of certain separate tables are also made and assist the Council in replying to the thousands of requests for information on licensure and related subjects.

As a result of the accelerated program in medical education a considerable increase occurred in numbers taking examinations in 1943 as compared with the preceding year. However, fewer licenses were actually issued last year than in 1942 because many graduates examined in December did not receive licenses until early in 1944. Their licenses will appear in the statistics to be published next year. In addition some physicians entered the Army before becoming licensed and fewer foreign graduates applied.

For a time there were large annual increases in foreign graduates examined, so that in 1940 there were over three times as many tested as in 1936. Since 1940 there have been annual decreases. The number last year was about half that of 1940, although it was still almost double the 1936 figure. Throughout the years failures among foreign graduates have been high. Nearly 50 per cent of foreign graduates examined failed in 1943 as compared with 1.5 per cent failures of graduates of approved schools and 38.4 per cent failures from unapproved schools.

AN EXPERIMENT IN THE EARLY DIAGNOSIS OF GASTRIC CANCER

A noteworthy experiment[1] has been made in the detection of early gastric cancer by roentgenologic examinations of persons over 50 without definite symptoms of digestive disorder. Starting with patients in the surgical follow-up clinic of the Presbyterian Hospital in New York, the plan was extended to include also persons who came to the hospital whether as patient, relative or friend. It did not prove difficult to persuade people to be examined, and there was "little evidence of arousing undue fear of cancer" and "they were usually happy and grateful to know the result."

The examination has been limited to a rapid fluoroscopy of the stomach by an experienced roentgenologist to determine only whether there was evidence or not of any abnormal condition. The experiment, now interrupted by the war, does not establish definitely the value of this mass gastric fluoroscopy, but the results obtained so far are of great interest. Of the 2,413 persons examined 3 had unsuspected gastric cancer (2 early carcinoma, 1 lymphosarcoma) and were subjected to subtotal resection with favorable prognosis —no metastasis—in the cases of carcinoma. A relatively large number of functional and organic noncancerous abnormalities were disclosed by the fluoroscopy. In 491 persons examined a second time a year or more after the first examination, cancer was not found. Excluding charges for roentgenologic equipment and for the services of the roentgenologist, the running expenses for the examination have been approximately 48 cents a person.

While it is true, as stated by St. John and his colleagues, that it cannot yet be said whether their method "is a practical one for reducing the large number of incurable gastric carcinomas that come to our hospitals," there can be no question that an important step has been taken in the right direction. "At least one thing should come of it, if nothing else, and that is an opportunity to learn more about the characteristics of early gastric carcinoma, for our experience so far has, unfortunately, been chiefly with its late manifestations." The problems of adequate provisions for the needed further study of mass fluoroscopy in the detection of early gastric cancer should receive careful consideration by life and health insurance companies, corporations with their thousands of employees, governmental and other hospitals, the Veterans Administration and other organizations that are concerned with the health of large groups of people. And should not gastric fluoroscopy with other methods be used more and more as part of periodic health examinations as well as in clinical diagnostic work generally?

1. St. John, F. B.; Swenson, P. C., and Harvey, H. D.: An Experiment in the Early Diagnosis of Gastric Carcinoma, Ann. Surg. **119**: 225 (Feb.) 1944.

CHEMOTHERAPY IN TUBERCULOSIS

The publicity given to the use of chemotherapeutic agents in the treatment of tuberculosis has focused attention on the possibility that a medical remedy may be found with specific action directed toward the infecting organism. Among the products thus far mentioned are promin, diasone, promizole and diaminodiphenylsulfone. The available evidence in behalf of these remedies has been accumulated largely through experiments on animals, although some studies have been made, particularly of promin and diasone, on human beings. The current interest has caused the Committee on Therapy [1] of the American Trudeau Society to issue a special report [2] which, because of its significance, is here published in toto:

The Committee on Therapy of the American Trudeau Society (Medical Section of the National Tuberculosis Association), in session March 17 and 18, 1944, at Chicago and Waukegan, Illinois, has reviewed information so far made available to it on the effects of Promin, Diasone, Promizole, diaminodiphenylsulfone and some related drugs upon previously established experimental tuberculosis in guinea pigs. It has also reviewed the very limited amount of roentgenological and clinical data from one institution so far made available regarding patients treated with one of the drugs, viz. Diasone. On the basis of these data the following statement has been authorized:

Promin, Diasone, Promizole and certain related compounds appear to possess in varying degree the striking ability to restrain the development of experimental tuberculosis in guinea pigs. It is recognized that experimentally induced tuberculosis in guinea pigs offers many contrasts with clinical tuberculosis in human beings, even though the causative organism is the same.

It is the opinion of the Committee that the clinical and roentgenological data so far made available to the Committee on the action of Diasone in human tuberculosis is as yet inadequate both quantitatively and qualitatively to permit, even tentatively, a positive evaluation of its curative effects upon tuberculosis in humans. The Committee believes that there is, at this time, no adequate basis for the optimistic implications of the magazine articles or of the releases to the press which are now so well known to both the profession and the public. It is believed, on the contrary, that such implications are distinctly unwarranted and not in accord with the clinical evidence which has been reviewed by the Committee. The Committee regrets exceedingly that the magazine articles mentioned previously were published in spite of efforts on the part of both the Committee and the clinician quoted to stop their publication.

Until controlled studies of adequate scope have been reported, it is recommended that none of these drugs be used for treating tuberculous patients except under conditions which will appreciably add to our knowledge of their clinical action, and in the presence of adequate facilities to protect patients effectively from their potentially serious toxic effects. Patients and physicians must also be reminded of the provisions of the federal regulations which prohibit the distribution of a drug in the experimental phase of development to other than research institutions to which the material is assigned by the manufacturer for either laboratory or clinical investigation. The Committee is informed that other clinical investigations are now in progress, and it is the expressed opinion of the Committee that such further well controlled clinical investigation is distinctly desirable.

Any use of chemotherapeutic agents, including Diasone, in the treatment of tuberculous patients must, therefore, be regarded as purely a project in clinical investigation. It must be again emphasized that such use is not without hazard and that the roentgenological and clinical evidence reviewed by the Committee gives no justification at this time for any attitude concerning the value of these drugs in patients other than one of critical interest.

While the development of an effective chemotherapeutic agent is not yet accomplished, the great strides that have been made in the field of chemotherapy in recent years would seem to offer definite hope for the not too distant future. Certainly, however, there is no reason to believe that a therapeutically effective agent is now available for general use.

1. The committee includes Dr. H. Corwin Hinshaw, Rochester, Minn., chairman; Dr. Kirby S. Howlett Jr., Shelton, Conn.; Dr. T. N. Rafferty, Northville, Mich.; Dr. Andre Cournand, New York; Dr. John N. Hayes, Saranac Lake, N. Y.; Dr. John C. Jones, Los Angeles, and Dr. John Steele, Milwaukee.

2. Report of the Committee on Therapy, American Trudeau Society, Am. Rev. Tuberc. **49**: 391 (April) 1944.

Current Comment

TRANSPORTATION TO ANNUAL SESSION

In the Organization Section in this issue of THE JOURNAL appears a letter from the Office of Defense Transportation urging physicians who plan to attend the annual session to leave their families at home and urging exhibitors to transport the least amount of material possible. Already there is evidence that the housing facilities of Chicago for the week of the annual session will be well nigh overwhelmed. It is apparent that the facilities for transportation will also be pushed to their utmost and that it will be especially difficult to obtain transportation returning home. Physicians who plan to come to the annual session should, if possible, make definite reservations for their return even before leaving home.

NATIONAL TUBERCULOSIS ASSOCIATION CELEBRATES FORTIETH ANNIVERSARY

On May 9-12 the National Tuberculosis Association celebrated its fortieth anniversary in Chicago under the presidency of Dr. Lewis J. Moorman. More progress in controlling tuberculosis has occurred in these forty years than in the previous four thousand. The first meeting, held in January 1904, was presided over by Dr. William H. Welch of Johns Hopkins. The representative committee of 38 included 37 physicians, whose names read like an honor roll of American medicine for that period. As Dr. Welch pointed out in the twenty-fifth anniversary meeting in Atlantic City, the conception was in Baltimore, the birth occurred in Philadelphia, and the organization was completed at a meeting held in Atlantic City. At that meeting Dr. William Osler presided and Dr. Henry Barton Jacobs acted as secretary. The first president was Dr. Edward L. Trudeau. The National Tuberculosis Association has played a considerable part by education and demonstration in teaching the value of rest, fresh air, adequate nutrition, proper housing and personal cleanliness in the control of this disease. It has aided in developing scientific use of the tuberculin test and in establishing the importance of routine roentgenologic examination of the chest for the detection and determination of the progress of tuberculosis. It has emphasized the importance of teaching tuberculosis in medical education. For these accomplishments the National Tuberculosis Association deserves the gratitude of our nation. The progress made is an astounding record of the battle against morbidity and mortality from tuberculosis.

PROPOSED TRANSFER OF HEALTH ACTIVITIES FROM LABOR DEPARTMENT TO U. S. PUBLIC HEALTH SERVICE

On April 25 Congressman A. L. Miller of Nebraska introduced in Congress a bill to transfer to the Federal Security Administration and the Public Health Service those functions of the Secretary of Labor and the Children's Bureau of the Department of Labor which are concerned with health, including industrial hygiene. Dr. Miller, in introducing his bill, spoke unequivocally and forthrightly regarding the necessity for this legislation. As a former state health director in Nebraska he had observed at first hand the activities of the Labor Department relating to health. Since the Children's Bureau was established on April 9, 1912 it has repeatedly expanded and extended its functions in all fields of health. The original act contemplated only investigation of child welfare and the control of such social problems as dangerous occupations, accidents and employment of children. At that time the Congress provided $25,640 for the work of this bureau. Today the Labor Department includes the Division of Maternal and Child Health, a Division of Crippled Children and a Division of Industrial Health, all of which have been expanding their activities. Much of their work is being duplicated in the U. S. Public Health Service. As pointed out by Congressman Miller, the definition has been adopted that a child is any one under 21 years of age. The extent to which the Labor Department enters directly into the activities of state health departments is so great that they actually audit the books of state health departments, check their moneys, pass on their health activities and in other ways control their functions, as, incidentally, does the U. S. Public Health Service also to a considerable degree. The amount of money available for matching purposes through the Children's Bureau has constantly expanded. Now that the emergency maternal and infant care program has been set up, the original $25,000 has been expanded to millions and millions. Congressman Miller said:

> It is my experience as state health director to find that these two agencies and the personnel in the health departments are jealous of each other. Each wants to expand his health activities. The confusion of plans and conflict of ideas made it difficult for state health directors to coordinate their programs to the best interests of the public. I am convinced that if all the health activities were under one head with moneys and plans spent with one objective in view, that we could eliminate much duplication and confusion in the promotion of better public health.

The House of Delegates of the American Medical Association has urged repeatedly the inclusion of all health activities of the federal government in a single agency. As physician, health officer and statesman Congressman Miller is true to his scientific training in launching this measure.

"PATENT MEDICINE" BALLYHOO ON THE RADIO

Although many leading publications of the country have made a serious effort to eliminate the worst of the "patent medicines" from their advertising pages, numerous radio stations remain notoriously backward in this respect. Hour after hour, day after day, loud speakers of radios blare forth outrageous claims for some nostrum or "patented" home remedy. The "patent" remedies advertised range from those that may be positively harmful, as is that discussed elsewhere in this issue (p. 107), to those that are merely grossly overpriced in relation to their value. Even these, however, tend to delay the use of dependable foods or services and initiate the expenditure of funds that might better be applied to securing scientific diagnosis and treatment. Recently newspapers as widely different as the Chicago *Tribune* and *PM* have almost simultaneously exposed some of the most notorious of the "patent medicines." But newspapers alone cannot solve this problem. The situation requires the housecleaning efforts of the radio industry itself and the more active interest of those governmental agencies, such as the Federal Trade Commission, Food and Drug Administration and Post Office Department, which are delegated with responsibility in this regard. The interests which exploit the sick through "patent medicine" advertising on the radio should not be allowed to tamper longer with the health and pocketbooks of the American people.

MEDICINE AND THE WAR

ARMY

AVIATION MEDICAL EXAMINERS

Graduation exercises were held on March 15 for aviation medical examiners following the course on aviation medicine. Brig. Gen. Eugen G. Reinartz, U. S. Army, commandant of the school, presented the diplomas. The list of students graduating follows:

ALABAMA

Charles E. Parker, Major, Montgomery.

CALIFORNIA

Thomas F. Barrett, Captain, Sausalito.
Albert G. Dittes, Captain, Arlington
Nathan A. Dubin, Captain, Lincoln.
John E. Esnard, 1st Lieut., Los Angeles.
Charles C. Gratiot, 1st Lieut., Monterey.
Lewis M. Kistler, Major, Los Angeles.
Guy E. Maggio, Captain, San Diego.
Edward S. Maloney, Major, Santa Rosa.
Gordon O. Mannerstedt, Major, Oakland.
Gordon L. Richardson, Captain, North Hollywood.
James O. H. Simrall, Captain, Los Angeles.
John H. Stark, Captain, Los Angeles.
John P. Young, 1st Lieut., Lemoore.

CONNECTICUT

John J. Gaffney, Captain, Danbury.
Morris P. Pitock, Captain, Fairfield.

DISTRICT OF COLUMBIA

Austin E. Lamberts, Captain, Washington.
Walter J. Romejko, 1st Lieut., Washington.
Alfred Wilson, Major, Washington.

FLORIDA

Allen P. Gurganious, Captain, Palatka.
Philip F. Simensky, Major, Orlando.

GEORGIA

Winston E. Burdine, Captain, Marblehill.
Sidney L. Hancock, Captain, Macon.
Charles H. Paine Jr., Captain, Atlanta.
John M. Trapnell Jr., 1st Lieut., Atlanta.

ILLINOIS

John E. Helm, Captain, Benton.
Robert D. Lowrey, Captain, Chicago.
Edward W. McNamara, 1st Lieut., Chicago.
Maurice D. Pearlman, Captain, Chicago.
John E. Stoll, Major, Oak Park.
Joseph J. Tovarek, Captain, Berwyn.
Irwin C. Winter, Captain, Clarendon Hills.

INDIANA

Charles J. Aucreman, Captain, Indianapolis.
Joseph H. Baltes, 1st Lieut., Fort Wayne.
Kile C. Hardesty, Captain, Fort Wayne.
Herbert L. Joseph, Captain, Indianapolis.

IOWA

Kyle T. DeYarman, Captain, Morning Sun.
Leland H. Prewitt, Major, Ottumwa.

KANSAS

Corbin E. Robison, Captain, Hoisington.
Leon W. Zimmerman, Captain, Liberal.

KENTUCKY

Meyer M. Harrison, Captain, Louisville.

LOUISIANA

Jack R. Jones, Captain, New Orleans.
Harold B. Levy, Captain, Shreveport.
John W. McGehee Jr., Captain, Baton Rouge.
Joseph B. Marino, Captain, New Orleans.

MARYLAND

Clarence W. Martin, Major, Baltimore.

MASSACHUSETTS

Paul H. Harwood Jr., Captain, Boston.

MICHIGAN

William A. Exum, Captain, Detroit.
Raymond G. Finnie, Captain, Hastings.
John V. Fopeano, Major, Kalamazoo.
Kenneth E. Gloss, Major, Crystal Falls.
Kenneth H. Johnson, Captain, Lansing.
William A. LeMire, Captain, Escanaba.
Henry Schlesinger, Captain, Detroit.
Karl E. Seidel, 1st Lieut., Ionia.
Loren E. Wanless, Major, Detroit.
William F. Weeks, Captain, Ann Arbor.
Harris L. Woodburne, Captain, Bay City.

MINNESOTA

Charles U. Culmer, Major, Duluth.
Robert S. Hunt, Captain, Fairmont.
George F. McIntosh, Captain, St. Paul.
Joseph D. Messler, 1st Lieut., Rochester.

MISSISSIPPI

Jesse T. Davis, Major, Corinth.
Lloyd E. Deedens, Captain, Gulfport.

MISSOURI

Arch. J. Beatty, Captain, Warrensburg.
Robert E. Buck, Captain, St. Louis.
Joseph Edward Flynn, 1st. Lieut., Clayton.
Raymond F. Holden Jr., Captain, St. Louis.
Louis F. Howe, Captain, Union.
Louis P. Kirtz, 1st Lieut., St. Louis.

NEBRASKA

John N. Round, Major, Ord.

NEW JERSEY

Sidney Alpert, Captain, Lakewood.
T. Louis Bacchiani, Captain, Nesconset.
John D. Barlow, 1st Lieut., Hightstown.
William X. Gebele Jr., Captain, Neptune.
Sylvan J. Greenfield, Major, Newark.
George V. Judson Jr., Captain, Barrington.
Kasper J. Price, Captain, Elizabeth.
Clarke Leo Smith Jr., 1st Lieut., Orange.
Leroy R. Weekes, Captain, Atlantic City.
Allen A. Welkind, Captain, Newark.

NEW YORK

Sidney S. Berkowitz, Captain, New York.
James E. Cavanagh, Major, Plattsburg.
Michael Eden, Captain, Jamaica.
Elroy L. Fulsom, Captain, Buffalo.
Joseph A. Gaetane, Captain, Jamaica.
Leigh S. Greenfield, Captain, Rochester.
Armand L. Greenhall, Major, New York.
Harold Guzzo, Captain, New York.
Saul S. Hauser, Captain, Brooklyn.
Arthur D. Hengerer, 1st Lieut., Albany.
Ralph Jacobs, Captain, West Orange.
Edward F. P. Kearney, Captain, New York.
Sumner B. Kingsley, 1st Lieut., Rome.
Albert L. Larson, Major, White Plains.
Sidney Leibowitz, Lieut. Col., New York.
Frank G. Leone, Captain, Utica.
Joseph Levy, Captain, New Rochelle.
Jack G. Lustgarten, Captain, Buxton.
Leslie W. Maillard, Major, Flushing.
Frank L. Okoniewski, Captain, Auburn.
Stanley C. Pettit, Captain, Staten Island.
Hugh M. Pierce, Captain, Rochester.
Joseph Y. Roberts, Captain, Watkins Glen.
Pasquale A. Ruggieri, Captain, New York.
Herbert S. Simpson, 1st Lieut., Port Henry.
Maurice B. Thompson, Captain, Great Neck.
Harold David Warren, Captain, Richmond Hill.
George J. Wayne, Captain, Brooklyn.

NORTH CAROLINA

Kenneth L. Cloninger, Major, Conover.
Ernest W. Furgurson, Captain, Plymouth.
Donald V. Hirst, Captain, Durham.
George J. Newman, Captain, Murphy.
William H. Thames, 1st Lieut., Greenville.

OHIO

Jack A. Adelman, Major, Columbus.
William D. Beasley, Major, Springfield.
Steven R. DeMeter, Major, Cleveland.
John W. Devanney Jr., Captain, Cincinnati.
Robert W. Kistner, 1st Lieut., Cincinnati.
Walter E. Martin, Captain, Columbus Grove.
Stanley Vangrov, Captain, Dayton.
Russell F. Wiggers, 1st Lieut., Cincinnati.
Robert E. Wirtz, Captain, Canton.

OKLAHOMA

William J. Campbell, Captain, Oklahoma City.
Edwin M. Harms, Captain, Blackwell.

PENNSYLVANIA

R. Stanley Bank, Captain, Harrisburg.
James Russell Bell, Major, Canonsburg.
Joseph Bloom, Captain, Philadelphia.
Joseph G. Buchert, Captain, Philadelphia.
John W. Davis, 1st Lieut., Philadelphia.
Samuel G. Huff, Captain, Eldred.
Bernard E. Lachman, Captain, Oil City.
Myron H. Matz, 1st Lieut., Connellsville.
Milton E. Muldawer, Captain, Philadelphia.
Ruben R. Pottash, Captain, Philadelphia.
Harold A. Tattersall, Captain, Harrisburg.
Frederick W. Volkwein, Captain, Bridgeville.

SOUTH CAROLINA

DuBose Egleston, Captain, Hartsville.

TENNESSEE

Charles A. Mella Jr., 1st Lieut., Nashville.
Cleo M. Miller, Major, Nashville.
John H. Saffold, Captain, Memphis.

TEXAS

Farris P. Allison, Major, Beaumont.
Jesse J. Hopkins, Captain, Baytown.
Hampton C. Robinson Jr., Captain, Missouri City.
George J. Seibold, Captain, Wichita Falls.

UTAH

Cecil L. Jorgensen, Captain, Ogden.

VERMONT

Bascom Bogle, Major, Northfield.

VIRGINIA

Harold M. Boslow, Captain, Appalachia.
Alter Laibstain, Captain, Norfolk.

WISCONSIN

Kenneth L. Haman, Captain, New London.
Thomas O. Nuzum, Major, Janesville.

The following officers are in the Brazilian Air Force:

Jose Amaral, 1st Lieut.
Cesario Geraldo Alvim, Captain.

MAJOR N. H. NICKERSON CITED

Major N. H. Nickerson, formerly of Greenville, Maine, has been cited for outstanding medical and liaison work in behalf of French and Arab civilians at Bizerte and Tunisia. Dr. Nickerson graduated from Bowdoin Medical School, Brunswick-Portland, Maine, in 1919 and enlisted in the U. S. Army Medical Corps in the fall of 1942. After six months' preliminary training in the United States he was sent overseas and stationed at Bizerte, Tunisia.

U. S. ARMY MOBILE UNITS SEEK BLOOD DONATIONS FROM ARMY UNITS IN ENGLAND

The United States Army Medical Corps has established mobile "bleeding teams" which will visit army units in England seeking donations to build up its blood bank reserve in preparation for invasion of western Europe. Col. Elliott C. Cutler, chief consultant in surgery in the European theater of operations, made the following comment on opening this traveling blood bank drive: "Whole blood and blood plasma are vitally important in a great military campaign if we are to save lives of wounded men. Our mobile units will enable us to reach soldiers who are happy to give blood to the bank but who have had no opportunity because facilities were unavailable." Only donors with O type blood are being accepted, since it is suitable for universal transfusion regardless of the patient's own blood type. The blood is placed in a special refrigerator, which holds 10 pints. In combat, refrigerator trucks will be employed to distribute the blood to advance hospitals.

WOMEN'S ARMY CORPS TO RECRUIT TECHNICIANS FOR MEDICAL DEPARTMENT

At the request of the Surgeon General, the Officer Procurement Service will cooperate with and assist the Women's Army Corps in the recruiting of qualified women technicians for enlistment in the Women's Army Corps for the Medical Department. All candidates will be enlisted in the grade of private and will be required to complete five weeks of basic training. On completion of the basic training, those who fulfil all requirements of their technical specialty are eligible for assignment to appropriate duties with the Medical Department. After assignment to duty, enlisted women are eligible for promotion to a noncommissioned officer grade or appropriate technician rating. Women are needed in many fields, among which are mentioned laboratory technician, dental laboratory technician, x-ray technician, lip reading technician, hearing aid technician, occupational therapist technician and pharmacist technician. Women qualified in the special skills are eligible for assignment as technical sergeants, staff sergeants or suitable technician's grades.

LIEUT. COL. JOSEPH M. BARSKY AWARDED LEGION OF MERIT

Lieut. Col. Joseph M. Barsky, formerly of Wilmington, Del., has been awarded the Legion of Merit "for exceptionally meritorious conduct in the performance of outstanding services as force sanitary inspector at an island base in the Pacific from Feb. 15, 1942 to Feb. 18, 1943. He planned and organized the sanitary measures for the protection of the base. He organized a system of dispensaries to cover the great area occupied by the many widely separated units. He supervised sanitary measures for the command and coordinated them with those of the civilian population. His success and accomplishments are measured by the low sick rate of the command. His leadership and force in sanitary control have raised the standards in the base and saved many men to the command." Dr. Barsky graduated from Jefferson Medical College of Philadelphia in 1914 and entered the service Sept. 23, 1940.

MAJOR STEPHEN W. ONDASH AWARDED LEGION OF MERIT

Major Stephen W. Ondash, formerly of Youngstown, Ohio, has been awarded the Legion of Merit "for exceptionally meritorious conduct in the performance of outstanding service from September 1941 to April 1942. During this period he served as surgeon for United States Engineer Department employees and a group of civilian workers at a barren and desolate station in Greenland, north of the arctic circle. Given four engineer employees without previous medical or surgical experience, he trained them to competence and instructed the only other officer in the detachment until he qualified as an anesthetist. Despite the rigorous weather and wind conditions at this isolated position, coupled with a lack of equipment facilities, his skill was such that no loss of life occurred among the station personnel. Major Ondash's work was such as to secure the confidence of all employees and heighten their morale and efficiency." Dr. Ondash graduated from St. Louis University School of Medicine in 1936 and entered the service Sept. 1, 1940.

MAJOR JAMES H. GRAMMER AWARDED LEGION OF MERIT

Major James H. Grammer, formerly of Bryan, Texas, has been awarded the Legion of Merit for "exceptionally meritorious conduct in the performance of outstanding services in New Guinea from Aug. 1 to Nov. 13, 1943. At an advanced operational base close to the enemy lines, Major Grammer served as flight surgeon for his group and as acting flight surgeon for an air task force. In addition to maintaining the health of pilots and ground crews, he immediately organized and carried out a vigorous sanitation program to control the tropical diseases prevalent in this area. He supervised the evacuation of the sick and wounded from this area, aided in the selection of field hospital sites and set up first aid stations to care for casualties at two airfields. So successful were the sanitary measures taken that the incidence of diseases was lower than expected. Major Grammer carried out this complex medical program with admirable skill and energy. His services constituted a valuable contribution to our success in this advanced area." Dr. Grammer graduated from the University of Texas Medical Branch, Galveston, in 1932 and entered the service April 1, 1941.

ETOUSA MEDICAL SOCIETY MEETING

At the Etousa Medical Society Meeting held at the Officers' Club, Headquarters, U. S. Strategic Air Forces in Europe, January 20, the program was opened by Brig. Gen. M. C. Grow, surgeon, U. S. Strategic Air Forces in Europe, followed by a few remarks by Brig. Gen. Paul R. Hawley, chief surgeon, Etousa. The following papers were then presented:

The Organization of Medical Service with an Air Force, and Summary of Medical Problems Peculiar to Aviation. Col. H. B. Wright, M. C., Professional Services Division, Hq. U. S. Strategic Air Forces in Europe.

Symposium on Protective Flying Equipment. Col. Harry G. Armstrong, M. C., assistant surgeon, U. S. Strategic Air Forces in Europe. Protective Flying Clothing and Oxygen Equipment. Capt. Richard J. Trockman, M. C., Eighth Air Force Central Medical Establishment.

Body Armor and Helmets. Lieut. Arthur Matin, M. A. C., Eighth Air Force.

Air/Sea Rescue Equipment. Lieut. Col. James J. Smith, M. C., Eighth Air Force Central Medical Establishment.

Recent Studies in Aero-Otitis Media. Lieut. Col. Norton Canfield, M. C., senior consultant otolaryngology, ETOUSA.

Normal Reactions to Combat Stress, Capt. David G. Wright, M. C., Eighth Air Force Central Medical Establishment.

Narcosis Treatment of Operational Exhaustion. Capt. Bernard C. Glueck, M. C., Eighth Air Force Central Medical Establishment.

Demonstration of Physiologic Phenomena Encountered in High Altitude Flying. Col. Harry G. Armstrong, M. C., assistant surgeon, U. S. Strategic Air Forces in Europe.

Results of Anoxia at High Altitude, with Presentation of Case Summaries, Major Oscar C. Olson, M. C., Surgeon, Third Bomb Division, Eighth Air Force.

A demonstration of equipment was given at the Eighth Air Force Museum.

During the meeting a business session was held at which the annual election of officers took place (THE JOURNAL, March 18, p. 782).

CAPT. EMERALD M. RALSTON AWARDED SILVER STAR

Capt. Emerald M. Ralston, formerly of Orleans, Neb., has been awarded the Silver Star for "gallantry in action near Mateur, Tunisia, May 6, 1943. He voluntarily proceeded over terrain swept by heavy enemy fire to administer first aid and to supervise the evacuation of the wounded. His noble and unselfish actions reduced suffering and saved many lives." Dr. Ralston graduated from Johns Hopkins University School of Medicine, Baltimore, in 1939 and entered the service May 20, 1942.

CERTAIN FOREIGN BIRDS OR THEIR PLUMAGE CANNOT BE IMPORTED

The War Department announced recently that military personnel overseas and in this country have been informed that it is unlawful to import into the United States or into any American territory certain foreign birds and animals and the plumage of wild birds. These include birds of paradise, aigrettes, egret plumes or so-called osprey plumes, or the feathers, quills, heads, wings, tails, skins or parts of skins of wild birds, either raw or manufactured and not for scientific or educational purposes. Also restricted are the mongoose, the so-called flying foxes or fruit bats, the English sparrow, the starling, and such other birds and animals as the Secretary of the Interior may specify from time to time. All members of the parrot family are barred because of the danger of infection from psittacosis.

FLIGHT SURGEONS' ASSISTANTS

A class of one hundred and eleven flight surgeons' assistants completed the six weeks course in aviation medicine at the School of Aviation Medicine, Randolph Field, Texas, April 21. Brig. Gen. Eugen G. Reinartz, U. S. Army, is commandant of the school.

NAVY

CADET NURSE CORPS

The United States Cadet Nurse Corps established by the Bolton Bill (HR 2664), approved June 15, 1943, sponsors the education, under government supervision, of young women for the nursing profession. By amendment to this act the federal services (Army, Navy, Veterans' Administration, Public Health Service and Indian Service) are permitted to accept in government hospitals the senior cadet nurses for the final six months period of their training.

The Navy Department has set up the policies and an educational program for those cadet nurses entering naval hospitals. Complete information relative to policies and plans on the navy program have been disseminated to accredited schools of nursing as well as to prospective students. In addition, requests have been sent to all state boards of nurse examiners requesting approval of the naval hospitals which have been designated to give this training. Thus far the only two states from which this approval has not been received are Florida and Texas. The first classes of nurse cadet personnel in the Navy began April 1, 1944 at the U. S. Naval hospitals at Seattle with 7 students and at Chelsea, Mass., with 20 students. U. S. naval hospitals at St. Albans, N. Y., and Oakland, Calif., will start classes May 1 with an enrolment of 25 students each. The naval hospitals at Portsmouth, Va., and San Diego, Calif., will start classes June 1.

The Navy will be the first of the federal services to put this program into practical operation. As a result of planning, the details connected with messing arrangement, housing and transportation are settled and ready to handle the entire group of entering students. It is expected that the number of students entering subsequent classes will have larger student complements.

OFFICE OF REHABILITATION ESTABLISHED AT THE BUREAU OF MEDICINE AND SURGERY

The Navy Department recently announced that the Surgeon General has authorized the establishment of an Office of Rehabilitation in the Bureau of Medicine and Surgery. This office will develop, place in operation and direct the program of rehabilitation for the Medical Department of the U. S. Navy. Rehabilitation, as it relates to this program, shall be interpreted as meaning all activities and services which may be required to supplement the ordinary or usual therapeutic procedures in order to achieve maximum adjustment of the individual patient either for further military services or for return to civil life with the least possible handicap from his disability. The Office of Rehabilitation shall serve in an advisory capacity in suggesting such procedures as may be expected to shorten the convalescent period and contribute to the rehabilitation of the patient.

PUBLISH NEWSPAPER AT U. S. NAVAL HOSPITAL AT FARRAGUT, IDAHO

A small newspaper called the *Bedside Examiner* is published weekly and distributed free at the U. S. Naval Hospital, Farragut, Idaho. The issue of April 14 comprises six pages in which items of interest at this hospital, its personnel, social events, promotions and new assignments are printed. It contains a column on "humor," a few cartoons, and some of its news items are illustrated. This small paper is published under the direction of Capt. H. S. Harding of the U. S. Naval Medical Corps, commanding officer, and is printed at no expense to the United States government.

CAPT. WALTER M. SIMPSON COMMENDED

Capt. Walter Malcolm Simpson, formerly of Dayton, Ohio, and now on duty at the U. S. Naval Hospital, Long Beach, Calif., received a letter of commendation "for meritorious performance of duty while serving as chief of medicine and later as executive officer of the first advanced naval base hospital to be established in the South Pacific Area during the period from April 12, 1942 to Nov. 1, 1943. Captain Simpson reflected great credit on himself by his outstanding professional ability, leadership and keen judgment. As liaison officer he dealt with officials of foreign nations with tact and diplomacy, thus contributing materially to the harmonious relations with foreign nationals. As president of the Malaria Control Commission and Sanitary Commission he organized and initiated the measures which led to the control of tropical diseases. His courageous conduct was in keeping with the highest traditions of the United States Naval Service." Dr. Simpson graduated from the University of Michigan Medical School, Ann Arbor, in 1924 and entered the service Jan. 3, 1941.

LIEUT. DEMERLE E. ECKHART AWARDED NAVY AND MARINE CORPS MEDAL

Lieut. Demerle E. Eckhart, formerly of Tescott, Kan., and now in the Medical Corps, U. S. Naval Reserve, was recently awarded the Navy and Marine Corps Medal "for heroic conduct while attached to the U. S. S. *Henley* on occasion of the torpedoing and sinking of that vessel by enemy Japanese forces in the Southwest Pacific Area, Oct. 3, 1943. Although he himself was covered with fuel oil, Lieutenant Eckhart labored tirelessly aboard heavily overloaded life rafts in order to render prompt first aid to survivors. Eventually picked up after nearly eight hours in the water, he continued his efforts in behalf of the wounded, rendering invaluable assistance to the medical officer of the rescue ship even though he was seriously ill as a result of swallowing quantities of oil. His courageous spirit of self sacrifice and steadfast devotion to duty were in keeping with the highest traditions of the United States Naval Service." Dr. Eckhart graduated from the University of Kansas School of Medicine in 1940 and entered the service July 18, 1942.

LIEUT. HORACE M. GEZON AWARDED LEGION OF MERIT

Lieut. Horace M. Gezon, formerly of Grand Rapids, Mich., and now a naval reserve corps officer, was recently awarded the Legion of Merit for his work during the typhus epidemic in Naples. The citation said that Dr. Gezon "took vigorous and effective measures to treat the cause" of the plague and "on one occasion personally inoculated and deloused the entire ship's company of a merchant ship." Dr. Gezon graduated from the University of Chicago School of Medicine in 1940 and entered the service early in 1942.

COMDR. HARRY RALPH HUSTON CITED

Comdr. Harry Ralph Huston, formerly of Dayton, Ohio, and now in the Medical Corps, United States Naval Reserve, has been cited "for meritorious performance of duty while serving at the first advanced naval base hospital to be established in the South Pacific area during the period from April 12, 1942 to Nov. 27, 1943. Commander Huston reflected great credit on himself by his outstanding professional ability and keen judgment in the surgical care of casualties and tropical diseases. His conduct throughout materially contributed to the success of our operations and was in keeping with the highest traditions of the United States Naval Service." Dr. Huston graduated from the Medical College of Virginia, Richmond, in 1920 and entered the service Jan. 12, 1942.

COMDR. OLIVER WILLIAM BUTLER CITED

Comdr. Oliver William Butler, formerly of Los Angeles and now in the Medical Corps of the United States Naval Reserve, has been cited "for meritorious performance of duty while serving as chief of urology and later as chief of surgery of the first advanced naval base hospital to be established in the South Pacific area during the period from April 12, 1942 to Oct. 30, 1943. Commander Butler reflected great credit on himself by his outstanding professional ability, leadership and keen judgment. His efficient handling of casualties materially contributed to the saving of many lives and to the success of our operations in that area. His conduct throughout was in keeping with the highest traditions of the United States Naval Service." Dr. Butler graduated from the University of California Medical School, Berkeley, in 1912 and entered the service July 18, 1941.

CAPT. JAMES W. ELLIS AWARDED LEGION OF MERIT

Capt. James W. Ellis, formerly of Cheyenne, Wyo., has been awarded the Legion of Merit "for exceptionally meritorious conduct in the performance of outstanding services to the government of the United States as corps surgeon of a Marine amphibious corps engaged in operations in the Solomon Islands area from Aug. 7 to Dec. 15, 1943. During this period of concentrated offensive action Captain Ellis displayed expert professional ability, sound judgment and splendid initiative in his planning and supervision of the vitally essential medical activities. By his tireless efforts and unwavering devotion to duty throughout these operations, he contributed materially to the success of our forces in the occupation of the Treasury Islands, the diversionary landing on Choiseul Island and the establishment of an important beachhead at Empress Augusta Bay on enemy-held Bougainville." Dr. Ellis graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1915 and entered the service in 1917. He is at present on duty at the U. S. Naval Hospital, Great Lakes, Ill.

LIEUT. MANNE PERRY ADAMS AWARDED SILVER STAR MEDAL

The Silver Star Medal was posthumously awarded to Lieut. Manne Perry Adams, Medical Corps, United States Naval Reserve, formerly of Sebring, Fla. The citation accompanying the award read "For conspicuous gallantry and intrepidity during action against numerically superior enemy Japanese forces near Koi-ari, Bougainville, British Solomon Islands, on Nov. 29, 1943. Attached to a company which was under extremely heavy machine gun, mortar and sniper fire, Lieutenant Adams repeatedly ministered to wounded men while under fire. On one occasion he unhesitatingly exposed himself directly to Japanese sniper fire in order to administer blood plasma to a severely wounded man and was instantly killed while performing his task. Lieutenant Adams's courageous spirit of self sacrifice in behalf of the men under his professional care and his valiant conduct in the face of grave peril were in keeping with the highest traditions of the United States Naval Service. He gallantly gave his life for his country." Dr. Adams graduated from Emory University School of Medicine, Atlanta, Ga., in 1941 and entered the service July 14, 1942.

COMDR. EMMETT L. CALHOUN AWARDED SILVER STAR MEDAL

Comdr. Emmett L. Calhoun, formerly of Hoquiam, Wash., and now in the Medical Corps of the United States Naval Reserve, has been awarded the Silver Star Medal "for conspicuous gallantry and intrepidity while serving aboard the U. S. S. *Northampton* during the engagement with enemy Japanese naval forces in the Solomon Islands area on Oct. 26-27, 1942. Despite his weakened condition after undergoing a major emergency operation, Commander Calhoun (then lieutenant commander) insisted on manning his battle station during the action and, as a result of the furious enemy attack, was seriously injured. The next day when 114 wounded survivors were received aboard his ship he worked tirelessly to relieve their suffering and, although seriously ill himself, continued his labors for a period of four days, undoubtedly saving many lives that otherwise might have been lost. His valiant self sacrifice and unfailing devotion to duty were in keeping with the highest traditions of the United States Naval Service." Dr. Calhoun graduated from Northwestern University Medical School, Chicago, in 1925 and entered the service Feb. 28, 1942.

LIEUT. EDWARD M. WURZEL AWARDED SILVER STAR MEDAL

Lieut. Edward M. Wurzel, formerly of New York, has been awarded the Silver Star Medal "for conspicuous gallantry and intrepidity during action against numerically superior enemy Japanese forces near Koi-ari, Bougainville Islands, British Solomon Islands, on Nov. 29, 1943. Valiantly risking his life in almost continuous Japanese fire from machine guns, mortars and rifles, Lieutenant Wurzel (then lieutenant, junior grade) worked tirelessly under the most perilous conditions to attend the dying and wounded. His courageous fortitude and outstanding skill while serving the men under his professional care were in keeping with the highest traditions of the United States Naval Service." Lieutenant Wurzel graduated from New York Medical College, Flower and Fifth Avenue Hospitals, in 1941 and entered the service following his internship in 1942.

COMDR. ALPHONSE McMAHON CITED

Comdr. Alphonse McMahon, formerly of St. Louis and now in the Medical Corps, U. S. Naval Reserve, was recently cited "for meritorious performance of duty while serving at the first advanced naval base hospital to be established in the South Pacific area during the period from April 12, 1942 to Oct. 21, 1943. Commander McMahon reflected great credit on himself by his outstanding professional ability and keen judgment, particularly in the management of war wounds and in the treatment of tropical diseases. His long experience as a teacher of medicine and his effective leadership in the instruction of young medical officers contributed materially to the success of our operations and was in keeping with the highest traditions of the United States Naval Service." Dr. McMahon graduated from St. Louis University School of Medicine in 1919 and entered the service April 12, 1942. He served as vice president of the American Medical Association in 1938-1939.

COMDR. WILLIAM HARRY LEAKE CITED

Comdr. William Harry Leake, formerly of Beverly Hills, Calif., and now in the Medical Corps, U. S. Naval Reserve, has been cited "for meritorious performance of duty while serving as chief of medicine of the first advanced naval base hospital to be established in the South Pacific area during the period from April 12, 1942 to Nov. 6, 1943. Commander Leake reflected great credit on himself by his outstanding professional ability, leadership and keen judgment. His efficient handling of casualties materially contributed to the saving of many lives and to the success of our operations in that area. His conduct throughout was in keeping with the highest traditions of the United States Naval Service." Dr. Leake graduated from Vanderbilt University School of Medicine, Nashville, Tenn., in 1916 and entered the service Sept. 2, 1941.

MISCELLANEOUS

MEDICAL FACILITIES FOR WOUNDED IN FORTHCOMING INVASION OF EUROPE

The War Shipping Administration, following recent discussions with the British Ministry of War Transport and British and American army officials, announced that American and British army medical facilities will be available to all United Nations seamen who may be wounded in the forthcoming invasion of Europe. Casualties will be registered and cleared through the British Ministry of War Transport and the Recruitment and Manning Organization of WSA. These two agencies will arrange to have men treated at British and American army hospitals in the United Kingdom or at army casualty stations on the beachheads. An extensive machinery has been set up in the United Kingdom to handle casualties and to arrange for transportation from the continent to hospitals in Britain.

The aid of the United Seamen's Service was enlisted in the program through USS personal service departments. The United Seamen's Service will make arrangements to assist survivors and accommodate convalescents at six USS clubs in the United Kingdom. The War Shipping Administration now has men in all principal seaports not only to man ships and make crew replacements in event of casualties but also to arrange for the transfer and hospitalization of seamen from all United Nations.

SUMMER GRADUATE COURSES AND WORKSHOPS FOR NURSES

The National Nursing Council for War Service, Inc., New York, recently announced that 33 colleges and universities have already stated their plans for summer courses and institutes; 27 are giving courses for public health nurses which have been approved by the National Organization for Public Health Nursing and 14 are offering short term workshops in problems of administration and education. Federal funds under the Bolton act have been allotted to 34 institutions offering postgraduate programs. Some of the courses begin before the end of May, while others are scheduled for June, July or August. Decisions must be made soon, therefore, by hospital administrators, executives and employing boards as well as by the nurses themselves. Far seeing administrators are already selecting the nurses who have shown special promise and are arranging leaves of absence for them. The fact that there are approximately 3,200 unfilled teaching, supervisory and head nurse positions in schools of nursing and hospitals has been revealed by a recent study made by the National League of Nursing Education, which comments that many additional positions are filled inadequately by persons lacking the necessary experience.

The status of the nurse taking postgraduate study is thus defined by the Procurement and Assignment Service:

> You will be classified as essential if you are preparing for an essential position, are potentially qualified for such position, can be prepared in the briefest possible time and can be replaced by a qualified nurse during your absence.

The tasks of teaching and administration now carried on under conditions of wartime stress and strain are clearly recognized as basic to the provision of adequate nursing care for military and civilian needs. Those who give these courses and those who take them, under the foregoing definition, are rendering a patriotic service.

MEDICAL AND SURGICAL RELIEF COMMITTEE OF AMERICA

The Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York, recently donated its 1,000th small vessel medical kit, designed for use on board submarine hunting, patrolling and landing craft to Capt. Ernest R. Eaton of the Navy Medical Supply Corps. Specially designed by committee physicians for small doctorless craft, the kits are equipped to give professional on the spot treatment to the ill or injured until they can be safely transferred to a base hospital. To enable pharmacists' mates and nonmedical officers to make effective use of its contents, detailed instructions are included in each set. In addition to the bandages, instrument roll and essential drugs the kit contains a shipwreck unit—a simple fishing rig, dried bait, metal signaling mirrors and a sturdy floating knife. Since the kits are easily carried and packed for immediate use they can be rushed directly to the casualties in emergencies or during combat.

The committee's Navy program is but one phase of its medical relief work. To date, more than $620,000 of medical, dental and surgical supplies have been donated to the fighting forces of the Allies, war zone hospitals, needy welfare groups, medical missionaries and community nurseries throughout the free world.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, May 6, page 38)

CALIFORNIA

Permanente Field Hospital, Oakland. Capacity, 134; admissions, 3,693. Dr. S. R. Garfield, Superintendent (interns).

DELAWARE

Delaware Hospital, Wilmington. Capacity, 411; admissions, 7,929. Mr. C. A. Hume, Superintendent (interns—October 1).

DISTRICT OF COLUMBIA

St. Elizabeths Hospital, Washington. Capacity, 7,471; admissions, 3,457. Dr. Winfred Overholser, Superintendent (4 interns—October 1).

NEW YORK

Binghamton City Hospital, Binghamton. Capacity, 559; admissions, 10,475. Mr. Jerome F. Peck, Superintendent (interns—July, September, October).

Mary Immaculate Hospital, Jamaica. Capacity, 316; admissions, 9,452. Sister M. Eugenia, Superintendent (4 interns—October).

Hospital for Joint Diseases, New York City. Capacity, 362; admissions, 5,531. Dr. J. J. Golub, Director (4 interns, Oct. 1, 1944; 8 interns, July 1, 1945).

Lincoln Hospital, New York City. Capacity, 469; admissions, 9,521. Dr. Randolph A. Wyman, Superintendent (interns—October 1).

PENNSYLVANIA

Hamot Hospital, Erie. Capacity, 255; admissions, 6,896. Mr. Donald M. Rosenberger, Director (3 interns—October 1).

WASHINGTON

Pierce County Hospital, Tacoma. Capacity, 239; admissions, 2,768. Dr. Burton A. Brown, Administrator (interns—July 1).

NOTED EXPERT IN TRAINING OF DEAF JOINS RED CROSS

Miss Betty C. Wright, one of the nation's foremost social workers in the field of assistance to the deaf, has joined the American Red Cross to aid in continuing its efforts to provide all possible recreational and social services to war injured veterans. Miss Wright, herself deaf, was granted a leave of absence from her position as executive director of the American Society of the Hard of Hearing. She will act as consultant to the Red Cross on special problems of war deafened soldiers, dividing her time between the three hospitals designated by the Army for special care of deaf veterans: the Deshon General Hospital, Butler, Pa., the Hoff General Hospital in California and the Borden General Hospital in Oklahoma.

Miss Wright worked in the Navy during the first world war, later served an apprenticeship with the Volta Bureau in Washington, D. C., and has been with the American Society for the Hard of Hearing since 1923. It will be her aim, through the Red Cross hospital program, to bring to each

deafened veteran the realization that he can be and is a productive member of society, that he has a wide choice of occupation, either immediately through the United States Employment Service or through retraining or special instruction, and that he is not shut off from activities he enjoyed before injury.

NEW MINIMUM STANDARD LIST OF MEDICAL SUPPLIES TO BE CARRIED ON ALL WSA VESSELS

The War Shipping Administration recently announced that the minimum standard requirements for drugs, chemicals and surgical supplies to be carried on all vessels owned or under bareboat charter to the War Shipping Administration have been revised and expanded. In addition to a minimum standard drug and medical supply, the new regulation provides that complete instructions for the use of the medications be available. The complete instructions will be included in the revised edition of the United States Public Health Service's publication "Ship's Medicine Chest and First Aid at Sea," which will be placed aboard all vessels. General agents are charged with the responsibility for seeing that all vessels owned or bareboat chartered to WSA are kept stocked with the prescribed medical supplies. The new minimum standard list of medical supplies was compiled on the basis of a seventy-five man crew for a voyage of three months for use on vessels not carrying a ship's doctor. Where a larger or smaller crew, or a voyage of more or less than three months' duration is planned, the drug supply may be adjusted proportionately. Plasma, penicillin and vaccines are to be placed aboard ship only if the vessel carries a ships surgeon or a graduate hospital corpsman from the U. S. Maritime Service Training Station Hospital Corps School at Sheepshead Bay, N. Y. These corpsmen combine hospital duties aboard ship with the functions of junior assistant pursers. Up to April, approximately 1,200 men were trained for this service.

DR. WILBUR A. SAWYER APPOINTED DIRECTOR OF HEALTH OF UNRRA

Dr. Wilbur A. Sawyer, New York City, has been appointed Director of Health of the United Nations Relief and Rehabilitation Administration, according to a recent announcement by Herbert H. Lehman, director general of UNRRA. He will be assigned to Washington and will be in charge of the Health Division of UNRRA and be responsible for planning and directing health and medical activities. His duties will require frequent visits abroad to the regional offices and field work. Dr. Sawyer has had long experience in international health activities through his connection with the Rockefeller Foundation's International Health Division, of which he has been director for the past nine years.

GAS GANGRENE ANTITOXIN FOR LEND-LEASE

The Chemicals Bureau of the War Production Board reported recently that members of the WPB Gas Gangrene Antitoxin Producers Industry Advisory Committee had been asked to submit proposals for producing all or any part of 1,350,000 doses of gas gangrene antitoxin for lend-lease. Members of the committee informed Chemicals Bureau officials that manpower shortages would constitute the biggest obstacle to production of the antitoxin, although only between 100 and 200 men would be needed.

WARTIME GRADUATE MEDICAL MEETINGS

Additional subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

At Fort George G. Meade, Maryland: General Discussion of Psychosomatic Medicine, Dr. John Whitehorn, May 19; Bronchiectasis, Dr. Edgar W. Davis, May 26.

HEALTH CRISIS IN THE NETHERLANDS

According to a recent release from the Netherlands Information Bureau, New York, long after the Nazis are driven out of Holland the effects of their occupation will be painfully evident in the lowered physical condition of the populace. Data reveal that the general death rate has increased from 8.6 per thousand in 1939 to 9.5 per thousand in 1942. Infant mortality is even more serious; in 1939 the rate was 34 per thousand; in 1941, only one year after the German invasion, it had advanced to 43 per thousand.

Deaths from tuberculosis increased nearly 100 per cent, from 41.2 per hundred thousand in 1939 to 80.7 per hundred thousand in the spring of 1943. Furthermore, investigations undertaken in 1942 by the Central Bureau of Statistics revealed that 20,000 more cases required sanatorium treatment that year than in the preceding twelve months period.

Rickets is another disease that results from malnutrition and is caused by lack of food containing vitamin D; it has been established that only 1 Dutch child in 3 receives this vitamin in normal amounts. In one hospital alone 11 out of 40 child patients had rickets, which was virtually unknown in prewar Holland.

Some infectious diseases have shown an alarming increase. Scarlet fever cases jumped from 7,197 in 1941 to 23,000 in 1943. Diphtheria, which had averaged little more than 1,270 cases in 1938 and 1939, increased to 19,400 cases in 1942, with 40,336 cases reported during the first ten months of 1943.

The health of the people in the Netherlands, according to a recent release from the Netherlands Information Bureau, New York, is endangered by serious shortages of drugs, hospital facilities and nurses. At the end of 1942 the country's chief health inspector issued a list of sixty-seven medicinal preparations of which there was a scarcity. These included boric acid, cocaine, caffeine, strychnine, castor oil, bismuth preparations, ancurine, camphor, iodine, calomel, chloroform, codeine, aminopyrine, gold preparations, morphine, opium, liquid petrolatum and metrazol.

An added blow fell with the "unexpected" disappearance last year of insulin stocks. Total consumption of the drug had to be halved. By the middle of February the supply to patients whose quota had been 20 units was cut off altogether; the seriously ill were compelled to manage on small quantities. Until the end of last year insulin could still be bought in the black market at five times the normal price. Many sufferers from diabetes were, however, forced to resort to methods used prior to the discovery of insulin. Among these is the "hunger cure," which, according to the secret document, is a potent means for fighting complications.

A further complicating factor is the shortage of trained medical personnel—physicians and nurses. Doctors who have not gone underground or been deported are terribly overworked. Owing to the disorganization of the universities the usual quota of 330 medical graduates was not filled last year, so that an added burden was thrown on the older practitioners. Consequently, when the Germans made preparations to transfer 1,500 doctors to the reich, the Dutch physicians threatened to go on strike, and for the time being, at least, the matter was dropped.

The *Nationale Dagblad*, Utrecht, of Dec. 22, 1943 quotes an article on a disease which has spread extensively during the war—scabies. "Before the war a doctor had hardly 1 case a year, but now it may happen that he has 10 a week. The spread of the disease is attributed to the fact that the population comes into contact with less hygienic persons from other countries."

DIPHTHERIA IN BULGARIA

According to Zora, January 4 (Bulgaria), the number of cases of diphtheria has continually increased since 1942. The question of diphtheria is today very complicated, because its spreading has been noticed almost everywhere; even those places which have escaped it until now are threatened. The chief public health directorate has issued a circular explaining the spreading of the disease. The population must be informed how to fight diphtheria. Children in infected places will be inoculated.

ORGANIZATION SECTION

TRANSPORTATION TO THE ANNUAL SESSION

The following letter was sent from the Office of Defense Transportation to Dr. Olin West, General Manager of the American Medical Association:

Dear Dr. West:

It is my understanding that the American Medical Association has decided that it is essential, both from the standpoint of the war effort, as well as its own organizational problems, to meet this year and that meeting has been set for Chicago, June 12 to 16.

In line with our policy as announced in the press from time to time, and concerning which you have been informed in communications addressed directly to you, the Office of Defense Transportation, in requesting the cancellation of all conventions which can be canceled without detriment to the war effort, is leaving to each organization the decision as to the essentiality of its meeting. We were grateful for the cooperation of the American Medical Association in its cancellation of its convention last year. Although we had hoped that similar action might be taken with respect to the 1944 convention, we are entirely willing to abide by your decision, which I am sure was made after giving full consideration to the very serious transportation situation as has been outlined in ODT communications addressed to you.

What I would like to ask, if you have not already done so, is that you take steps to limit the attendance at the A. M. A. convention to the minimum of those whose presence is essential to carrying on the affairs of the Association. I especially hope that you will urge in all your preliminary announcements of the convention that all visitors whose presence is not necessary, including the families of physicians attending, remain at home.

I would also appreciate it if you would call the attention of prospective exhibitors to our previously announced request that exhibitors at conventions, trade shows and other meetings refrain from shipping booths and large and bulky exhibits and exhibit materials, in order to conserve much needed train and truck space. If the American Medical Association itself could request these exhibitors to restrict their activities at the convention to the distribution of literature which could be shipped without taking up much space, I feel sure that it would accomplish the desired purpose.

In appreciation of your anticipated cooperation, I am

Yours very truly,
M. D. RIGGS.
Assistant Director, Passenger Section, Division of Traffic Movement.

OFFICIAL NOTES

COMMITTEE ON POSTWAR MEDICAL SERVICE

Meeting, New York, April 29, 1944

The Committee on Postwar Medical Service met in New York City on April 29, 1944. There were present Dr. Irvin Abell, Dr. Francis G. Blake, Comdr. Edward L. Bortz, Dr. Frederick A. Coller, Surg. Gen. Warren F. Draper, Capt. W. E. Eaton, Dr. Morris Fishbein, Lieut. Col. Gerard R. Gessner, Dr. Joseph M. Glaser, Dr. Alan Gregg, Dr. Ernest E. Irons, Dr. Roger I. Lee, Lieut. Col. Harold C. Lueth, Dr. Walter W. Palmer, Dr. James E. Paullin, Dr. George M. Piersol, Lieut. Col. George M. Powell, Dr. Willard S. Rappleye, Dr. H. H. Shoulders and Miss Mary Switzer.

REPRESENTATION ON THE COMMITTEE

The Chairman, Dr. Roger I. Lee, opened the meeting with a discussion of the nature of the Committee's work as related to numerous requests which have been received from various organizations for representation on the Committee. The Committee cannot assume the status of an organization representing a wide variety of organizations without losing its functions as a committee and its status originally established by collaboration between the American Medical Association, the American College of Physicians and the American College of Surgeons. The Committee is glad to have an expression of the point of view of a wide range of individuals and groups concerned with postwar service problems but does not consider it wise so to extend its membership as to become unwieldy and so defeat its original purpose. It was moved, seconded and passed that no representatives from additional groups be added to the Committee membership for the present.

RETURNS FROM QUESTIONNAIRE

The Committee heard an informal presentation by Lieutenant Colonel Lueth on the sample questionnaire returns covering 500 individuals. This questionnaire was sent out in order to test the questions to be posed in a larger questionnaire and arrive at the best formulation and arrangement of the questionnaire to be sent to large numbers of men in military service. Lieutenant Colonel Lueth's recommendation that the items in the questionnaire bearing on education be somewhat extended was approved. It was reported that authorization has been obtained to send the questionnaire as revised to medical officers in the Army, Navy and the United States Public Health Service, and it was agreed that steps should be taken promptly to proceed with the preparation and mailing of questionnaires.

PROCUREMENT AND ASSIGNMENT SERVICE

After extended discussion it was moved, seconded and passed that the Chair appoint a committee to prepare suggestions and recommendations to the National Administration of Procure-

ment and Assignment regarding the basic considerations to be observed in the releasing of medical men from military service at the time of demobilization. Dr. Lee appointed Drs. W. W. Palmer, W. C. Rappleye and Allan Gregg, with Dr. Palmer as chairman of this committee. Dr. Ernest E. Irons reported that the Trustees of the American Medical Association would wish to cooperate in the maintenance of an information service, which, however, would not have the function of a placement bureau but merely act as a source of information. Dr. Lee will prepare a report for the House of Delegates on the work of the Committee. It was moved, seconded and passed that the Committee request Dr. Lee to lay some emphasis in his report to the House of Delegates on the importance of collaboration between the state medical societies and the Procurement and Assignment officers and offices in each state. The records of Procurement and Assignment are of singular value in arriving at satisfactory estimates as to the number of physicians needed in different areas of each state. It would be unfortunate to have such records disregarded or not available to the state medical societies.

The next meeting of the Committee was fixed for Wednesday, June 14, at the Palmer House in Chicago at 10 a. m.

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 4:30 p. m. Eastern war time (3:30 Central war time, 2:30 Mountain war time and 1:30 Pacific war time).

The titles and guest speakers for the next three programs are as follows:

May 13. Canceled.[1]

May 20. "War Nerves."
Speaker, Lieut. Col. Harold C. Lueth, M. C., A. U. S., Surgeon General's Liaison Officer, American Medical Association.

May 27. "Fatal Mistakes."
Speaker, Forrest E. Long, M.D., director, School and College Safety Division, National Safety Council.

1. At the request of the Office of War Information, Doctors at War relinquished its network time in order that the United States Public Health Service, Division of Nurse Education, might be able to broadcast a nationwide induction program for the Cadet Nurse Corps. Doctors at War will continue to be on the air regularly through and including July 1. The American Medical Association is happy to render this service to the United States Public Health Service and to the cause of the Cadet Nurse Corps.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 1767, which has already passed the Senate, has been favorably reported to the House in an amended form, a bill to provide federal aid for the readjustment to civilian life of returning World War II veterans. As passed by the Senate, this bill authorized an appropriation of $500,000,000 for the construction of additional hospital facilities for veterans. As reported to the House it appropriated from time to time "such sums as may be necessary for the construction of additional hospital facilities." H. J. Res. 271 has passed the House, proposing an additional appropriation of $6,700,000 for use during the remainder of the present fiscal year for emergency maternity and infant care for the wives and infants of enlisted men in the armed forces. H. R. 3846 has been reported to the House in an amended form, a bill to provide for the education and training of members of the armed forces after their separation from service. H. R. 4278 has passed the Senate, a bill providing, among other things, for the carrying out of agricultural conservation and related agricultural programs. An amendment adopted on the floor of the Senate provides that none of the money made available in the Department of Agriculture Appropriation Act, 1944, for loans, grants and rural rehabilitation shall be used in the promotion or aid of any program of medical care which prevents the patient from having the services of any practitioner of his own choice so long as state laws are complied with. This amendment was submitted by Senator Bushfield, South Dakota. H. R. 4519 and S. 1726 have been reported to the Senate, authorizing an appropriation of $1,000,000 to enable the Administrator of Veterans' Affairs to furnish seeing eye dogs for veterans.

Bills Introduced.—The President has transmitted to the Congress a supplemental estimate of appropriation for the emergency maternity and infant care program for the wives and infants of men in the armed forces (H. Doc. 561). The initial estimate for the program for the fiscal year 1945 was $20,000,000. The President has recommended that this be increased to $42,800,000. H. R. 4688, introduced by Representative Holifield, California, provides that on and after July 1, 1943 each member of the various Selective Service local boards, each government appeal agent and each examining physician who assists in the administration of the Selective Training and Service Act shall be entitled to receive compensation at the rate of $600 per annum, payable monthly. H. R. 4708, introduced by Representative Bloom, New York, proposes to amend the Federal Food, Drug and Cosmetic Act so as to provide that a drug shall be deemed misbranded if it contains any quantity of boric acid or of any other substance which is poisonous when used internally and which is similar in appearance to another drug which is for use internally, unless it bears a label containing the statement "Warning—Poisonous If Used Internally." H. R. 4741, introduced by Representative Spence, Kentucky, proposes to provide for water pollution control activities in the Public Health Service. H. R. 4760, introduced by Representative Lane, Massachusetts, provides that any member of the land or naval forces of the United States who is or has been a registered male nurse and who is performing duties as a nurse comparable to the duties performed by members of the Army Nurse Corps (female) or Navy Nurse Corps (female) shall be appointed by the Secretary of War or the Secretary of the Navy to the relative rank of second lieutenant in the Army or ensign in the Navy, as the case may be.

ADDITIONAL FUNDS FOR OBSTETRIC AND PEDIATRIC PROGRAM

It will be of interest to physicians to learn that, since the hearings, concluded April 27, on the estimates of appropriations for a continuation of the program for supplying obstetric and pediatric care for the wives and infants of servicemen, the President has requested additional appropriations for the program. Apparently the funds that have already been appropriated for this fiscal year are about exhausted. Therefore Congress has been requested to make available an additional appropriation of $6,700,000 to continue the program during the remainder of May and during June. Without this additional appropriation, it is said, the states will have to suspend authorizations. Last March it was estimated in the Budget that $20,000,000 would be needed for the program for the fiscal year 1945. It was on this estimate that the recently concluded hearings were scheduled. Now the President has transmitted to Congress a recommendation of the director of the Bureau of the Budget that $42,800,000 be appropriated for use during the next fiscal year, an increase over the initial estimate of $22,800,000. In support of this increase, the Director said in his letter to the President:

> Estimates previously made of the requirements of this program for fiscal year 1945 were considered adequate on the basis of information then available. Succeeding events have materially altered the basic assumptions, and information recently made available to the Children's Bureau by Service Headquarters of the armed forces has caused the bureau to revise its estimates for grants to states to take care of an increasing number of applications for care which are anticipated in 1945.

These new requests for appropriations were referred to the House Committee on Appropriations and a joint resolution, H. J. Res. 271, authorizing the $6,700,000 has already been introduced and passed by the House of Representatives. Its passage by the Senate will no doubt be expedited.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

State Medical Election.—Dr. Walter F. Scott, Birmingham, was elected president of the Medical Association of the State of Alabama at its meeting in Montgomery, April 20. Dr. Douglas L. Cannon, Montgomery, is the secretary. The association will hold its 1945 session in Birmingham, April 17-19.

ARKANSAS

Dr. McLean Ends Thirty-Six Years as Secretary.—With his recent election to the presidency of the Montgomery County Medical Society Dr. John H. McLean, Caddo Gap, completed thirty-six years' service as secretary of the society. He was elected to the position of the society March 1, 1908 and served continuously until March 1 this year. Dr. McLean, who has been practicing since 1902, is an honorary member of the Arkansas Medical Society.

CALIFORNIA

Tuberculosis Associations Merged.—The Los Angeles Tuberculosis and Health Association and the Los Angeles County Tuberculosis and Health Association have been consolidated under the name of the latter. Glenn V. Armstrong, executive secretary of the city association, will hold a similar position with the combined group.

The Dock Lecture.—"Medical Education Goes Westward" was the title of the annual George Dock Lecture, April 6, by William F. Norwood, Ph.D., associate professor of the history of medicine and assistant dean of the College of Medical Evangelists, Los Angeles. The George Dock Lectures are presented by the Barlow Society for the History of Medicine.

Personal.—Dr. David M. Ghrist, Glendale, was presented on March 20 with a certificate of membership emeritus in the American College of Radiology. This is said to be the first time that this honor has been issued to a member of the college by its board of chancellors, the action being established at a meeting of the board on February 13.——Capt. George F. Cottle (MC), retired, has recently been made an honorary member of the Los Angeles County Medical Association; he is the third person to receive this honor in the association.

GEORGIA

University News.—Ernest C. Faust, Ph.D., professor of medical parasitology and head of the division of tropical medicine, Tulane University of Louisiana School of Medicine, New Orleans, discussed "Some Biological Interrelationships," April 14, at the formal installation at Emory University, Atlanta, of a chapter of the Society of the Sigma Xi.

New Wing at University of Georgia Hospital.—The new wing at the University Hospital, Augusta, now under construction, is expected to be finished by July 15. The construction will be two stories high, but arrangements have been made for a possible later addition of two more stories. The construction cost will be about $124,000, with equipment costs to run about $20,000. Half of the total cost will be paid by the Federal Works Agency and the other half by Augusta Revenue Bonds. The building is of reinforced concrete frame, veneered with brick to match old buildings.

ILLINOIS

Public Health Meeting.—The fourth annual scientific meeting of the Illinois Public Health Association and the second war conference will be held at Hotel La Salle, Chicago, May 15-16. Speakers at the various sessions of groups participating in this meeting will include:

Estella Ford Warner, senior surgeon, U. S. Public Health Service, Whitherbound in Public Health.
Chauncey D. Leake, Ph.D., Galveston, Texas, Antibodies and Chemotherapy.
Dr. Arthur Massey, Coventry, England, New Trends in the British Health Services.

One session will be devoted to postwar problems in tropical diseases, with Dr. Walter C. Earle, Champaign, Joseph C. McCaffrey, M.P.H., Springfield, and William J. Downer, B.S., Springfield, as the speakers. There will be an open forum on "Evaluation of Local Health Work," with Dr. Edward A. Piszczek, Chicago, secretary of the Illinois Public Health Association, acting as chairman, and George T. Palmer, Dr.P.H., Springfield, discussing "Evaluation Schedules, Development of Reporting Areas and Use of Health Indices."

Chicago

Loyola Alumni Luncheon.—The alumni of Loyola University School of Medicine will hold a luncheon meeting during the session of the Illinois State Medical Society in room 8 of the Palmer House at noon, May 17.

Hematology Research Foundation.—Dr. Raphael Isaacs, chief of the hematology research laboratory, Michael Reese Hospital, has been named medical director of the newly incorporated Hematology Research Foundation. The foundation has been set up by a number of prominent lay persons who are currently seeking funds to finance the project. One of the first problems for consideration by the new group will be a study of leukemia.

Boric Acid to Be Colored.—The Chicago Department of Health adopted a resolution May 3 requiring the coloring of boric acid used in maternity wards as a precautionary measure to prevent the possible poisoning of babies. Similar action was taken recently by the New York City Department of Health. The order makes it unlawful to store boric acid for use in maternity wards of hospitals unless it is colored red by the addition of harmless amaranth dye. The coloring is not to be used for boric acid intended for application to the area of the eyes. The order further provides that boric acid, whether colored or not, shall not be kept in a room where feedings for infants are prepared.

Portrait of Dr. Wilson.—An oil portrait of Dr. John Gordon Wilson, chairman of the department of otolaryngology at Northwestern University Medical School, was presented to Dr. James Roscoe Miller, dean, for the medical school on behalf of associates and friends of Dr. Wilson. Dr. John F. Delph, associate professor of otolaryngology at Northwestern, made the presentation at a tea in the Archibald Church Library, April 28. The portrait is the work of Paul Trebilcock. Dr. Wilson has been associated with Northwestern since 1908, when he was named professor and head of the department of otology. In 1920 he was named professor and chairman of the department of otolaryngology.

Ricketts Prize Awarded to Dr. Thompson.—The Howard Taylor Ricketts Prize was awarded to Paul Everett Thompson, Ph.D., by the University of Chicago, May 3, for his "outstanding research on malaria" at the university. Dr. Thompson's work, according to a release from the university, resulted in the discovery of three new species of malarial parasites peculiar to lizards from Mexico and Florida and contributed significantly to knowledge of the life cycle of malaria. It was stated that his work in a field not previously investigated is considered helpful in understanding some of the current problems of malariology. Dr. Thompson received his doctor of philosophy degree at the University of Chicago in 1943. He has been working as Mr. and Mrs. Logan research fellow and on June 1 will leave the university to become assistant professor in the department of tropical diseases at Tulane University of Louisiana School of Medicine, New Orleans.

Maud Slye Retires.—Maud Slye, Sc.D., since 1926 associate professor of pathology, University of Chicago School of Medicine, will retire from the university effective July 1. Dr. Slye first joined the university in 1896 as a part time secretary to William Rainey Harper, first president of the university. She was instructor in pathology at the university from 1919 to 1922 and assistant professor from 1922 to 1926. In 1914 she received the gold medal of the American Medical Association for her scientific exhibit on the transmission of hereditary cancer and other diseases in mice, in 1915 the Ricketts Prize of the University of Chicago and in 1922 the gold medal of the Radiological Society of North America. A release from the university states that in the past thirty-eight years Dr. Slye in her experiments has observed 108 generations of mice, keeping records of 150,000 of their family trees. The retirement of Dr. Mercy A. Southwick as instructor of pathologic technic is also announced. Dr. Southwick and Dr. Slye will be retired with the title of emeritus.

INDIANA

Basic English and Medicine.—The current issue of the *Quarterly Bulletin* of the Indiana University Medical Center as an experiment published one of its medical articles in Basic English and asks alumni of the Indiana University School of Medicine, Indianapolis, now serving the army forces in all

parts of the world to report "concerning the advisability of translating more of our discussions into this global language." In an editorial discussing the reasons for the experimental use of the Basic English idea, Dr. Jacob K. Berman, Indianapolis, editor of the bulletin, states:

> In medicine, physicians have always spoken in a more or less basic tongue. Medical terms are usually of Latin or Greek derivation and, although slightly variegated in the different languages, the stem is the same so that the word could be easily recognized by the scientists of all nationalities. The descriptions of disease, its symptoms, signs and its management have been in the vernacular of the nation from which they originated. This has made necessary international abstracts with more or less accurate translations which are carried by various national medical periodicals. If some universal speech was used, this would be unnecessary.
>
> English lends itself best to this formula of simplification. There has been a trend away from the Greek names of operations for some time. Our classification of operations for filing is that of the Western Surgical Association, which advocates English words. Formerly the removal of the vermiform appendix was classified as appendectomy or appendicetomy. Today we prefer to use the term "excision of the appendix." Since the word excision does not exist in Basic English, we would be forced to use the phrase "taking of the appendix," or "taking out of the appendix." Basic English does not attempt to take away scientific terms; however, these would be held to a minimum.

KENTUCKY

State Association News.—The council of the Kentucky State Medical Association has accepted the invitation of the Fayette County Medical Society to hold its annnal meeting in Lexington, September 18-20. Arrangements have recently been made whereby the state medical association has been given space in the annex of the state board of health building, Louisville, to house library and other records of the association.

LOUISIANA

Blood Bank at Charity Hospital.—Dr. John Adriani has been named in charge of a blood and plasma bank now being developed at Charity Hospital, New Orleans. According to the *Bulletin* of the Orleans Parish Medical Society, the bank will consolidate the small independent banks previously managed by the various services throughout the hospital. The facilities, which will be housed in converted operating and auxiliary rooms in the east wing of the twelfth floor, will consist of processing and storage rooms, sterilizing rooms, laboratories, one of which will be set aside for use at night, and washing rooms. Facilities will be provided in converted clinics in the west wing of the first floor for donors, 18 to 20 of whom may be bled at one time. Provision has been made in these facilities for physical examinations when these prove necessary, and provision has also been made for donors who may wish to rest after their blood has been drawn. At first the bank will store only whole blood and liquid plasma. Later, as it expands, plasma will probably be frozen, and still later it may be dried. The bank will be operated on the "debit-credit" system. Calls will be met from built-up stores, the donation to be replaced later by donations from relatives or friends of the patient. Donor sources throughout the state will be tapped by means of a mobile unit, for which the American Legion and its auxiliary have contributed $2,500. After processing at Charity Hospital, a proportion of the plasma will be returned to the community from which it was taken. The bulletin intimates that eventually the new bank will be the largest in the South, forming a reserve for the entire state.

MASSACHUSETTS

Foundation for Experimental Biology Incorporated.—The Worcester Foundation for Experimental Biology at Clark University, Worcester, has recently been organized. The purpose of the organization is "to carry on investigations in the biologic sciences, including the medical sciences." Hudson Hoagland, Ph.D., on war leave from his position as professor of general physiology and director of the physiologic laboratory, Clark University, is executive director of the foundation, and Gregory G. Pincus, Sc.D., visiting professor at Clark University, is director of laboratories. Harlow Shapley, Sc.D., director of the Harvard Astronomical Observatory, Boston, is president of the board of trustees, members of which include Dr. Roy G. Hoskins, director of research of the Memorial Foundation for Neuro-Endocrine Research, Boston; William J. Crozier, Ph.D., professor of general physiology at Harvard University; Dr. William Malamud, clinical director of the Worcester State Hospital and professor of clinical psychiatry at Tufts College Medical School, Boston, and Dr. Samuel S. Gwynne, Worcester. The foundation is interested in the general physiology and biochemistry of the hormones and respiratory enzymes and their possible interrelations. It is also concerned with applications of such work to studies of psychomotor fatigue, particularly in industry, and to neuropsychiatric problems. Extensive clinical facilities for the latter work are available at the Worcester State Hospital, where the research staff, including members of the Memorial Foundation for Neuro-Endocrine Research, are cooperating closely with the work of the foundation. The work of the new foundation is, according to Dr. Hoagland, essentially an incorporation of work which has developed over the past ten years in the Clark University physiologic laboratory and which has been almost wholly supported since 1933 by grants outside of Clark University given for the purpose by philanthropic foundations, industries and individuals. Dr. Hoagland points out that the foundation is autonomous from Clark University.

MINNESOTA

State Medical Election.—Dr. Edward L. Tuohy, Duluth, was elected president of the Minnesota State Medical Association at its recent annual meeting in Rochester. Vice presidents are Drs. Sidney A. Slater, Worthington, and J. Arnold Bargen, Rochester. Drs. Benjamin B. Souster, St. Paul, and William H. Condit, Minneapolis, are secretary and treasurer respectively. The state association awarded its distinguished service medal to Drs. Willard L. Burnap, Fergus Falls, and William F. Braasch, Rochester, for their "professional accomplishments and for service to the profession in Minnesota."

NEW HAMPSHIRE

State Medical Meeting.—The one hundred and fifty-third annual meeting of the New Hampshire Medical Society will be held at the Hotel Carpenter, Manchester, May 16, under the presidency of Dr. James W. Jameson, Concord. The speakers will be:

Dr. Sven M. Gundersen, Hanover, Virus Pneumonia.
Dr. Herman L. Kretschmer, Chicago, President-Elect of the American Medical Association, Diagnosis and Treatment of Cystitis in Women and Children.
Dr. Chester S. Keefer, Boston, Penicillin.
Dr. Harold M. Marvin, New Haven, Conn., Practical Considerations in the Diagnosis and Treatment of Heart Disease.
Capt. Benjamin Tenney Jr. (MC), Casualties in the South Pacific.

NEW YORK

Personal.—Dr. Stockton Kimball, associate in medicine and pharmacology at the University of Buffalo School of Medicine, recently returned from a study of malaria and other tropical diseases in Costa Rica and Guatemala. Dr. Lawrence Edgar Hummel, assistant dean of the medical school and assistant professor of medicine, also made a trip to Guatemala for a similar study.

Graduate Lectures.—Dr. John G. Fred Hiss, professor of clinical medicine, Syracuse University College of Medicine, Syracuse, will deliver a graduate lecture before the Medical Society of the County of Cayuga, May 25, at the Auburn City Hospital, Auburn. The subject will be "Rheumatic Fever—Rheumatic Heart Disease." The Seneca County Medical Society will be addressed, May 18, in Waterloo, by Dr. Ellery G. Allen, Syracuse, on "General Résumé of Hematological Disorders, Including the Anemias." A series of graduate lectures will be opened on May 17 for the Medical Society of the County of Sullivan, with a talk by Dr. Philip M. Stimson, New York, on "The Early Treatment of Poliomyelitis with a Description and Evaluation of the Kenny Technics." Others in the series include:

Dr. Donovan J. McCune, New York, Deficiency Diseases, May 24.
Dr. Harold G. Wolff, New York, Headache, June 7.
Dr. Ralph G. Stillman, New York, The Significance of Laboratory Tests and Methods in the Practice of Medicine, June 14.
Dr. Joseph J. Bunim, Brooklyn, Newer Chemotherapeutic Methods, June 21.
Dr. Norman H. Jolliffe, New York, The Relation of Vitamins to Disease, June 28.

The lectures are sponsored by the state medical society and the state department of health.

New York City

Harvey Society Lecture.—William H. Sebrell Jr., surgeon, U. S. Public Health Service, chief, division of chemotherapy, National Institute of Health, will deliver the eighth Harvey Society Lecture of the current series at the New York Academy of Medicine, May 18. His subject will be "The Relation Between Sulfonamide Drugs and Vitamin Deficiencies."

Dr. Loyal Davis to Speak at Cornell.—The annual Walter L. Niles Memorial Lecture will be delivered on May 18 at the Cornell University Medical College Auditorium by Dr. Loyal Davis, professor of surgery at Northwestern University Medical School, Chicago. His subject will be "Experiences as Consultant in Neurological Surgery in European Theater of Operations." The lecture is sponsored by the Tau Chapter of Nu Sigma Nu fraternity and honors the late Dr. Walter L. Niles, former dean of Cornell.

Boric Acid Solution to Be Colored Pink.—The New York State Department of Health has adopted a regulation making it mandatory for all boric acid solution to be colored pink through the use of vegetable dye. In Washington, D. C., a bill (H. R. 4708) was introduced in Congress April 28 asking for passage of a law requiring poison to be marked on the labels of boric acid containers. These actions have been prompted by the recent deaths of infants in a Connecticut hospital, which occurred when boric acid was in error included in the babies' formulas.

Mayor Offers Health Plan.—Mayor Fiorello La Guardia, in a broadcast April 30 over station WYNC, proposed a plan of health insurance "open to all who live or work within the city of New York" to provide "everything necessary to keep one from getting sick and everything medically available to cure one who is sick." It was stated that the plan would be put into operation "not later than the first of the year." Newspapers reported that the plan, as proposed, would be broader than any medical plan now in effect in the United States, the services to include costs at home, physicians' offices and hospitals, and would emphasize "preventive" check-ups. It would be managed by a nonprofit corporation, to be formed within the next two months under state law, with a "nonpolitical" board of directors and a medical board responsible for quality of treatment, research and ethics of the participating physicians. It was stated that $250,000 would be necessary to start the enterprise and that it was hoped to raise this sum privately. All physicians would be invited to take part, but, if the county medical societies reject the plan, it was stated that the mayor promised to go ahead with a "closed panel" enrolling its own doctors and relying heavily on physicians returning from the armed forces. Present health and hospital insurance plans would be invited to merge into the new organization. In a statement to the press, Dr. William B. Rawls, chairman of the economic committee of the five county medical societies in New York, is reported to have intimated that the societies did not know of the proposed plan until the broadcast. He is reported to have said that "the county groups had approved a $2,500 limit for lower income groups," while the new plan would cover all persons earning up to $5,000 a year. Membership would be by groups such as companies, unions or fraternal organizations. Premiums would approximate 4 per cent of an employee's wages, at least half to be paid by the employer, this portion being deductible from federal and state taxes and not subject to National War Labor Board wage veto. The mayor proposed that the city pay half the cost for its employees, provided the board of estimate and council approved. It was stated that the mayor did not present his plan as "complete or immutable," preferring, he said, "a national compulsory system" such as the long pending Wagner-Murray-Dingell social security extension bill, which he called "the outstanding legislative proposal before the American Congress." In his recent budget message to the board of estimate, the mayor reported that he was disappointed not to be able to inaugurate a citywide health insurance plan. In expressing his disappointment at that time, the mayor said:

> I hope that before long a definite plan will be completed. I must express at this time sad disappointment in the attitude of organized medicine. We must have greater cooperation from organized medicine. No one must be permitted for selfish reasons to hold it back. The fine, splendid, experienced, skilful, public spirited medical men who are in the armed forces, with their colleagues here, particularly the younger ones, will have a lot to say about it when they come home. We depend on them.

Louis Pink, president of the Associated Hospital Service, which has 1,500,000 subscribers to the so-called 3 cents a day plan to pay certain hospital costs alone, called the mayor's proposal "the most significant experiment of its kind in the United States" and stated that his group would "do everything possible to help the mayor and the medical profession and existing medical plans to work out and put into operation a comprehensive medical plan for this area." David M. Heyman, vice chairman of the mayor's committee on medical care, which has been studying the project since April 22, 1943, stated that the physicians would find "a new source of income" through employer payments and predicted that the plan would reduce absenteeism.

OHIO

Dr. Torald Sollmann Retires.—Dr. Torald H. Sollmann, associated with Western Reserve University School of Medicine, Cleveland, since 1895, will retire as dean of the medical school and head of the department of pharmacology on June 30. Dr. Sollmann reached the retirement age February 10. He will continue to pursue his research in pharmacology, a large part of which he was forced to drop when he became dean of the medical school in 1928. Dr. Sollmann graduated at Western Reserve in 1896. He has been a member of the faculty since 1895, teaching as demonstrator in physiology. In 1898 he became lecturer in pharmacology and is credited with the subsequent development of the department at the medical school. He later became assistant professor of pharmacology and materia medica and in 1904 was named to a full professorship. He is chairman of the Council on Pharmacy and Chemistry of the American Medical Association. Dr. Sollmann will be succeeded as professor and head of the department of pharmacology by Dr. Arnold D. Welch. His successor as dean will be announced later. Dr. Welch received his doctor of philosophy degree at the University of Toronto in 1934 and his medical degree at Washington University School of Medicine, St. Louis, in 1939. He became director of pharmacology research for Sharp and Dohme in 1940 and director of research in 1943.

PENNSYLVANIA

Personal.—Dr. John S. Niles Sr. has resigned as chief of staff of the Carbondale General Hospital, a position he has held for fifty-five years, the Scranton *Tribune* reported on April 7.——Dr. Charles J. Hemminger, Somerset, was reappointed March 8 a member of the state board of medical education and licensure for a term of four years.——Dr. George L. Stephan, Atglen, has been appointed a member of the Parkersburg Board of Health.

Philadelphia

Bequest to University.—The late Dr. Charles W. Burr, formerly professor emeritus of mental diseases, University of Pennsylvania School of Medicine, bequeathed $200,000 to the endowment fund of the university. He also willed his library to the university, consisting of about 19,000 volumes.

Personal.—Dr. Joseph McFarland has recently returned from a lecture tour in San Jose, Costa Rica and Central America. Included among his lectures were "Fundamental Principles of Inflammation" and "Probable Causes of Tumors." Dr. McFarland's daughter, Dr. Helen McFarland Woodbridge, also lectured on "Bacteriology of Inflammation."——Dr. Ignatius S. Hneleski, formerly chief resident at the Philadelphia General Hospital, has been named superintendent.

County Society Demands Revocation of Schireson's License.—A recent two weeks investigation conducted by the state board of medical registration and licensure meant "nothing at all," according to evidence presented to Governor Martin by Attorney General James H. Duff, newspapers reported April 27. The evidence is reported to show that the board's senior investigator, Edward R. Williams, not only had failed to gather evidence against Dr. Henry P. Schireson but, according to witnesses against the plastic surgeon, attempted to intimidate them. The Philadelphia *Record* has been publishing an exposé of Schireson's activities and the Philadelphia County Medical Society has been demanding the revocation of Schireson's license for the last eleven years. The *Record*, in commenting on the recent investigation by the state board, stated that the board presented as its excuse that it had not received effective cooperation from the attorney general's office when Schireson employed lawyers to fight action. Schireson was once involved in a notorious damage suit in which he was ordered to pay the complainant $40,000. Since then his licenses to practice medicine in various states have been revoked. Dr. Irvin D. Metzger, Pittsburgh, a member of the board since 1915, has resigned.

SOUTH DAKOTA

State Medical Meeting.—The South Dakota State Medical Association will hold its annual session in Huron, May 21-23, under the presidency of Dr. Joseph C. Ohlmacher, Vermillion. Among the speakers on the program will be:

Dr. Albert V. Stoesser, Minneapolis, Is Vaccine Therapy of Value in Allergies of Children?
Dr. Frederic E. B. Foley, St. Paul, Hydronephrosis—Diagnosis and Treatment.
Dr. John S. Lundy, Rochester, Minn., Comments on the Usefulness of Various Anesthetic Agents.
Dr. Harry A. Oberhelman, Chicago, Chronic Mastitis in Its Relation to Cancer of the Breast.
Dr. Paul H. Holinger, Chicago, Indications for Bronchoscopy in Pulmonary Disease.
Dr. Calvin C. Applewhite, Kansas City, Mo., Medical Leadership in Public Health.
Dr. Charles M. Wilhelmj, Omaha, The Agenda of Postwar Medical Practice.
Dr. William F. Braasch, Rochester, Prepayment Plans for Medical Care.
Dr. Virgil S. Counseller, Rochester, Hysterectomy—Selection of the Appropriate Operation for the Particular Case.
Major George H. Stein, M. C., A Comparative Radiologic Study of Primary Atypical and Bacterial Pneumonia.
Lieut. Col. Saul Michalover, M. C., Some Interesting Aspects of Aviation Physiology and Medicine.
Dr. Harry E. Harvey, Lincoln, Neb., Placentae Abruptio.

One session will include a round table discussion of x-ray films, with Dr. Nelius J. Nessa, Sioux Falls, presiding and Major Stein the leader.

TENNESSEE

Dr. Schmeisser Resigns as Chief of Pathology Division.—Dr. Douglas H. Sprunt, since 1932 associate professor of pathology, Duke University School of Medicine, Durham, N. C., has been appointed chief of the division of pathology at the University of Tennessee College of Medicine, Memphis, to succeed Dr. Harry C. Schmeisser, who has held the position since 1921 and who has resigned because of ill health. Dr. Schmeisser will continue as professor of pathology.

Meharry Given Millions for Endowment.—The General Education Board of the Rockefeller Foundation recently granted $4,300,000 to Meharry Medical College, Nashville. The sum of $4,000,000 has been earmarked for endowment, while the $300,000 has been classified as a contingent fund to help during the next few years while the finance committee of the board of trustees gets the endowment portion properly invested and yielding income for the college. Dr. Edward L. Turner is president of the college.

State Medical Election.—Dr. William C. Chaney, Memphis, was named president-elect of the Tennessee State Medical Association at its annual meeting in Nashville, April 13. Dr. Kyle C. Copenhaver, Knoxville, was inducted into the presidency. Other officers include Drs. Hubert P. Clemmer, Milan; Bernard H. Woodard, Spring Hill, and John Marsh Frere, Chattanooga, vice presidents, and Harrison H. Shoulders, Nashville, secretary-editor. Dr. Ernest R. Zemp, Knoxville, was elected for the twenty-first consecutive year as speaker of the association's house of delegates.

GENERAL

Meeting of Neurologists.—The American Neurological Association will hold its seventieth annual meeting at the Waldorf-Astoria in New York, May 19-20, under the presidency of Dr. Edwin G. Zabriskie, New York. Among the speakers on the program will be:

Drs. Salomon Katzenelbogen, Alfred K. Baur and Anna R. Coyne, Washington, D. C., Electro-Shock Therapy: Clinical and Biochemical Studies.
Dr. Hans H. F. Reese, Madison, Wis., Multiple Sclerosis and Dicoumarin Therapy.
Dr. George D. Gammon, Philadelphia, Immediate and Early Results of Penicillin Treatment of Neurosyphilis.
Drs. Lewis J. Pollock, James G. Golseth and Alex J. Arieff, Chicago, Discontinuity of Strength Duration Curves in Muscle in Diagnosis of Peripheral Nerve Lesions.
Dr. Frederic A. Gibbs and Erna L. Gibbs, Boston, Electroencephalographic Changes with Age in Adolescent and Adult Control Subjects.
Dr. Alexander Adler, Boston, A Case of Visual Agnosia.

College of Chest Physicians.—The tenth annual meeting of the American College of Chest Physicians will be held at the Stevens Hotel, June 10-12, Chicago, under the presidency of Dr. J. Winthrop Peabody, Washington, D. C. Among speakers from other countries will be Lieut. Col. James D. Adamson, R. C. A. M. C., on "Pneumonitis" and Dr. Ovidio Garcia Rosell, Lima, Peru, "Classifications of Clinical Aspects of Tuberculosis with Regard to Teaching." Other speakers on the program will include:

Major Brian B. Blades, M. C., Segments of the Lung from the Standpoint of Surgical Procedure.
Major Walter L. Nalls, M. C., Pitfalls in the Diagnosis of Atypical Pneumonia.
Dr. Karl H. Pfuetze, Cannon Falls, Minn., Diasone in the Treatment of Pulmonary Tuberculosis (One Year's Experience).
Dr. Jose de Carvajal-Forero, New York, Roentgenography of the Soft Tissues of the Thoracic Cavity and Neck.
Dr. E. W. Alton Ochsner, New Orleans, Primary Carcinoma of the Lung.
Dr. Louis N. Katz, Chicago, Pulmonary Embolism.
Dr. Jerome R. Head, Chicago, Experiences with Monaldi Intracavitary Suction.

One feature of the meeting will be a session showing the latest developments in tuberculosis and other diseases of the chest in World War II. Among the speakers will be Major Gen. Shelley U. Marietta, M. C., Capt. Robert E. Duncan (MC), Dr. Roy A. Wolford, Herman E. Hilleboe, senior surgeon, U. S. Public Health Service, and Col. Esmond R. Long, M. C.

Mayer Cancer Award.—Dr. Alexander Lipschütz, director of the department of experimental medicine of the Chilean National Health Service at Santiago, Chile, has been chosen as the recipient of the second $2,000 prize given by Charles L. Mayer and administered by the National Science Fund of the National Academy of Sciences. The award was offered for an outstanding contribution made in 1943 to present day knowledge of factors affecting the growth of animal cells, with particular reference to human cancer. Dr. Lipschütz was born in Riga, Latvia. He held various positions in medicine and physiology at institutions in Switzerland and Germany before going to Chile about fifteen years ago to serve at the Catholic University at Concepcion. He has been director of the department of experimental medicine of the National Health Service since 1938. According to a release from the National Academy of Sciences, Dr. Lipschütz, together with the Chilean scientists working in his laboratory, has been studying for the past six years the fibromyomas of the uterus which can be induced in guinea pigs by the injection of certain sex hormones of the female. The growths closely resemble the fibromyomas ("fibroids") which occur in women during the childbearing period, and Dr. Lipschütz has shown that like these they dwindle and vanish when the stimulation of the sex hormones is withdrawn, as happens after the menopause in women. He and his associates have sought means to prevent the occurrence and enlargement of the growths while the hormones are still acting, and recently they have found that some other hormones from other organs have this effect, as do also certain substances synthetized by chemists. The molecular configurations responsible for the influence of the antifibromatic agents are now under investigation.

New Foundation to Develop Artificial Limbs and Orthopedic Apparatus.—The establishment of the Research Institute Foundation was recently announced. The new group is dedicated to scientific research and development in artificial limbs and orthopedic apparatus with Chester C. Haddan, 1633 Court Place, Denver 2, as chairman of the board of governors. The foundation was incorporated as a nonprofit scientific research organization by the Association of Limb Manufacturers of America. The board of governors represents members of the American Academy of Orthopaedic Surgeons, American Orthopaedic Association, Association of Limb Manufacturers of America, Office of the Surgeon General of the U. S. Army, Bureau of Medicine and Surgery of the U. S. Navy, U. S. Veterans' Administration, Disabled American Veterans and the American Federation of the Physically Handicapped. The establishment of a scientific laboratory in Detroit is in progress, according to an announcement. The foundation will be financed by contributions from interested persons or organizations, grants, bequests and donations or by allocation of state and federal funds. Any suggestions may be presented to the foundation by any person or group of persons for research and development, and any developments or devices released by the foundation shall be free to all, so long as they are used ethically for the public good and not exploited commercially. In addition to Mr. Haddan, other members of the board of governors are:

Capt. Joseph S. Barr (MC), Bureau of Medicine and Surgery, U. S. Navy.
Dr. George E. Bennett, adjunct professor of orthopedic surgery, Johns Hopkins University School of Medicine, Baltimore, president, American Academy of Science.
Dr. Harold R. Conn, Akron, Ohio, orthopedic surgeon, City Hospital, Akron and St. Thomas Hospital; surgeon-in-chief, Goodyear Tire and Rubber Company.
A. S. Hanger, Washington, D. C., vice president, Association of Limb Manufacturers of America.
Frank O. Peterson, Detroit, treasurer, Association of Limb Manufacturers.
Col. Leonard T. Peterson, M. C., Office of the Surgeon General, U. S. Army.
Millard W. Rice, Washington, D. C., National Service Director, Disabled American Veterans.
Dr. Edwin J. Rose, Washington, D. C., assistant medical director, U. S. Veterans' Administration.
Walter R. Sievers, New York, vice president, Association of Limb Manufacturers.
Paul A. Strachan, Washington, D. C., president, American Federation of the Physically Handicapped.
Dr. Atha Thomas, Denver, assistant professor of orthopedic surgery, University of Colorado School of Medicine; attending orthopedic surgeon, Childrens Hospital and Colorado General Hospital.
Dr. Philip D. Wilson, New York, clinical professor of orthopedic surgery, Columbia University College of Physicians and Surgeons; surgeon-in-chief, Hospital for Special Surgery; medical director, American Hospital in Britain.

Seminar on Industrial Aspects of Ophthalmology.—The National Society for the Prevention of Blindness opened a course of five lecture conferences April 26 to be conducted on the following Thursday evenings through May 25. The course is offered without charge to ophthalmologists and will cover acute need for ophthalmologists in industry; industrial eye hazards (protection equipment and its maintenance); first aid (facilities, treatment, scope, limitations and control); industrial nursing, illumination for industry, visual examination; refraction and prescription for industrial working conditions; job analysis for visual requirements, and governmental and voluntary health agencies. The lecturers include Joseph Lo Presti, assistant surgeon, who was assigned in 1943 by the U. S. Public Health Service to the National Society for the Prevention of Blindness to carry on a program in the field of industrial hygiene. A group of cooperating agencies, together with the U. S. Public Health Service, has been developing an industrial eye hygiene program with emphasis on visual job analysis. The results of the survey are to be

made available later. Thus far the work has included a study using an Ortho-Rater at the Stevens Institute, Hoboken, N. J., covering a group of 336 first term students enrolled in the drafting course. Efforts at the Visual Institute, Purdue University, Lafayette, Ind., where the Ortho-Rater was developed, were also surveyed. In addition, a comprehensive industrial visual survey was carried out in Connecticut to obtain a cross section of industrial vision practices in a typical, concentrated industrial region, to compare various methods of examination, particularly screening tests, for vision and to derive recommendations for methods of appraising and improving existing visual conditions, both of employees and of plants which may serve as a pattern to be followed throughout the country.

LATIN AMERICA

Health Activities in Latin America.—*Recommendations at Pediatric Congress.*—Included among recommendations approved at the second Congress of Pediatrics, held in Mexico City, March 27-31, under the auspices of the Mexican Pediatric Society, were those urging the appointment of a committee to formulate suggestions for a law controlling maternity care, the introduction of courses in child care in girls' schools, the improvement of sanitary conditions, medical treatment and methods of isolation of children with leprosy, the intensification of the Mexican campaign against intestinal parasites, the establishment of an institution for the convalescence and readjustment of children crippled by poliomyelitis, and the creation of local pediatric societies for systematic exchange of child health information. It was also recommended that Cuba be asked through the Ministry of Health and Welfare and the Mexican Anti-Tuberculosis Committee to ship cultures of its new antituberculosis vaccine to Mexico. Among those from the United States attending the congress were Dr. Irvine McQuarrie, Minneapolis, whose subjects included "The Therapeutic Use of Penicillin in the Child"; Dr. Henry F. Helmholz, Rochester, Minn., "Disturbances of the Thyroid Glands in Children"; Dr. Archibald L. Hoyne, Chicago, "Treatment of Meningitis with the Sulfonamide Drugs," and Mrs. Elisabeth Shirley Enochs, associate in public relations, U. S. Children's Bureau, Washington, D. C., "Children's Services During Wartime and the Postwar Period." At a special meeting of the Mexican Academy of Medicine Dr. Bela Schick, New York, spoke among other things on "The Cardiac Viscera."

Institute of Cardiology Opened.—The Mexico City Institute of Cardiology was officially opened on April 18 as a "center of studies for specialists from all the Americas." The institute plans to provide hospitalization for patients requiring it, to furnish physicians with opportunities for research, to train general practitioners for a career in cardiology and to offer social assistance to needy patients. Accommodating 120 beds, the institute will also conduct an outpatient service. Fees will be adjusted to meet the need of the patient. For the patient a program of rehabilitation will be offered to help manual workers to accommodate themselves to sedentary occupation. For the student physician the institute will demand that its investigators abandon their private practice or other obligations in order that they may concentrate on their studies; tuition, board, lodging, laundry and a small salary will be allowed, this privilege to be extended to foreign as well as to native practitioners. At the expiration of the eighteen month course some investigators will be allowed to continue their work on the same terms. A feature of the opening of the institute was a Pan American Congress on Cardiology, April 19-23, and the organization of the Pan American Heart Association. Dr. Ignacio Chavez, who was instrumental in founding the institute of cardiology, was chosen president and secretary-treasurer of the heart association.

Tuberculosis Conference.—The first National Tuberculosis Conference will be held in Mexico City, July 23-29, under the auspices of the Mexican Society for the Study of Tuberculosis and the Mexican Ministry of Health and Welfare. Dr. Miguel Jiminez will preside at the meeting.

Medical Care for Mica Workers.—The Institute of Inter-American Affairs, an agency of the Office of the Coordinator of Inter-American Affairs, and the United States Foreign Economic Administration are cooperating with the Brazilian government in providing medical care for mica miners in the Rio Doce Valley. The local health agency of the Servico Especial de Saude Publica in Brazil is cooperating in the attempt to provide basic medical care and sanitary facilities; three physicians and five sanitary inspectors have established headquarters at Governador Valadores, according to the *Inter-American Economic News.*

Government Services

Fellowships in Health Education

Fellowships in graduate health education leading to a master of science degree in public health are being offered by the U. S. Public Health Service through funds made available by the W. K. Kellogg Foundation. The training provides twelve months in public health education and includes nine months in academic work in public health and public health education and three months of supervised field experience. They provide a stipend of $100 per month for twelve months, full tuition and travel for field experience. Candidates must pay their travel to and from the university at the beginning and end of training. Fellowships, which will be available for the fall college quarter of 1944, are extended this time only to qualified American women between the ages of 19 and 40. Men cannot be considered because of the demand for manpower for military service. Qualifications should include a bachelor of science degree or its equivalent from a recognized college or university. Additional information may be obtained from the Surgeon General, U. S. Public Health Service, Washington 14, D. C. Applications must be accompanied by transcript of college credits and a small photograph and must be in the office of the surgeon general not later than August 1.

New Distribution of Lanham Funds

On April 11 the Federal Works Agency announced that about $10,000,000 had been allocated for 287 was public works and services and child care projects throughout the country. Of the $115,000,000 recently appropriated by Congress for wartime community facilities under the Lanham act more than $9,000,000 had been made available for the 287 previously approved projects. All or part of the federal assistance for these projects had been deferred pending the availability of additional funds for the Federal Works Agency programs. The new allotments included $5,487,659 in federal funds for 57 war public works projects, $1,248,111 in federal contributions for 72 war public services projects, and $2,934,909 for 158 projects for assistance in the maintenance and operation of child care facilities. Included among the war public works projects are health centers in Elizabeth City, N. C., and Lewisburg, Tenn., and health center alterations in Parsons, Kan. Others will be a hospital addition in Pasadena, Calif., a venereal disease clinic in Atlanta, Ga., hospital facilities in Kansas City, Kan., and isolation hospital facilities in Portland, Ore. Included in the war public services are venereal disease hospitals in Indianapolis, Minneapolis, Rush Springs, Okla., Richmond, Va., and Hamilton, Davidson and Shelby counties, Tenn., and a hospital in Jacksonville, N. C. The funds providing for child care facilities will be expended in thirty-nine states.

Occupational Therapists Needed

The U. S. Civil Service Commission, Washington, D. C., announces a number of positions available for occupational therapists. In greatest demand are experienced graduates of accredited occupational therapy schools. Experience should be in hospitals acceptable to the American Medical Association. For some positions, however, college training in psychology and in arts and crafts or trades and industries, or experience as a junior aide in veterans' hospitals, may be substituted for training in occupational therapy schools. Other positions will be filled by inexperienced graduates of occupational therapy schools. The salary range of these positions is from $1,970 to $2,433 a year, including overtime pay. Those appointed at $1,970 will be trainees for a period of eighteen months; those appointed at $2,190 and $2,433 will administer occupational therapy under medical and general supervision, in army and veterans' hospitals. There are no age limits and no written tests, but applicants must be physically capable of performing the duties involved. Persons now using their highest skills in war work should not apply. Federal appointments are made in accordance with War Manpower Commission policies and employment stabilization programs. Additional information may be obtained from first and second class post offices or from the U. S. Civil Service Commission, Washington 25, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 8, 1944.

The Evil of Fancy Names for Drugs

One of the great difficulties of the physician in the treatment of disease is the bewildering number of new remedies. Some of them are real advances, but many belie the claims made for them and after a career of wide but brief popularity disappear. Another difficulty created for the physician is the use of different proprietary names for the same remedy or for slightly different substances with the same action. Manufacturing chemists are held responsible for this evil, which, though widespread and long existing, seemed to be largely ignored. In the *British Medical Journal*, February 26, page 307, a correspondent, Dr. Robert C. Taylor, pointed out that there are already signs that manufacturing chemists are planning to exploit or "develop" (in the trade sense) the sulfonamides, as they have in the past exploited the barbiturates. At present, war conditions hinder this tendency, but it seems certain that, on the restoration of peace, exploitation will increase unless some control is instituted. The process of "development" is only too familiar: The firm's chemist produces a slight variation of an existing compound (an easy matter in organic chemistry). Then an inadequate clinical trial is staged—often by the offer of free supplies. Next the compound is given a fancy name and is boosted by every device of advertising, and finally the "sales resistance" of the practitioner perforce collapses. Dr. Taylor therefore asks that action be taken before a bewildering array of good, bad and indifferent remedies is thrust upon us. Either the Ministry of Health, the Medical Research Council or the Pharmacopeia Commission, he says, should institute a measure of control.

Skin Fitness for Tropical Service

The *Army Medical Department Bulletin* describes the skin as the organ most directly exposed to the strains of a tropical climate—a fact emphasized by the news that more than a third of the men invalided home from a particular area had to leave the tropics because of skin diseases. Equally important is the fact that one fourth of these men had histories and signs of skin disability which ought to have prevented them from being sent to the tropics. Recent experience in the Middle East has shown that men with bright red hair and very fair, highly freckled skins, without pigment between the freckles, soon become afflicted with "desert sore" no matter what care is taken to acclimatize them. They thus differ from men with ordinary fair skin, who, though liable to the same lesions, can be acclimatized if due care is taken. Men are unsuitable for tropical service who have definite histories and signs of chronic or recurrent skin diseases such as blepharitis, boils, seborrheic dermatitis, dermatitis herpetiformis, hyperhidrosis, severe ichthyosis, lupus erythematosus, psoriasis (unless very mild), rosacea, sycosis barbae, prurigo, recurrent urticaria, lichenification (especially scrotal) and all forms of dermatitis due to light sensitization. Cheiropompholyx is a disqualification if no cause, such as a fungus, can be found. Chronic indurated acne unfits a man for tropical service, but ordinary simple acne improves in hot climates. The same holds true for mild ichthyosis. It is emphasized that it is the fact of chronic or recurrent attacks of the disease in question that is evidence of the disability; a single attack of boils or sycosis with complete recovery should not prevent a man from going to the tropics.

Besides preventing unsuitable men from being sent to the tropics, medical officers can give advice to increase skin comfort in tropical climates. Many men leave this country with latent tinea of the feet, which soon becomes troublesome in warm climates, especially on troop ships. It is a simple and useful practice for men on troopships to dust the feet, groins and axillas daily with a mildly antiseptic powder.

Checking Gases Administered by Anesthetists

The Medical Defense Union, which was formed for the purpose of defending members of the medical profession against whom actions at law are brought for alleged malpractice, has issued a warning to anesthetists. In conjunction with the Society of Anesthetists the union is reviewing certain difficulties which anesthetists have in recognizing the gases delivered from anesthetic apparatus. All anesthetists are urged to satisfy themselves personally about the actual gas about to be administered to a patient and not to rely on the assurance of others. The factor of personal responsibility should never be absent from the mind of the anesthetist. Before administering any gas or any mixture of gases he should check his apparatus and cylinders completely to satisfy himself beyond reasonable doubt of the character of the gaseous anesthetic he is about to administer. A full report by these two bodies on how to obviate errors of wrongful coupling or misidentification of gases used will be made on completion of the investigations.

The Army Has a Use for the Neurotic

The *Army Medical Department Bulletin* calls attention to the "Annexure Scheme," introduced in 1941, which has resulted in many neurotic persons finding suitable employment in the army instead of being returned to civil life. A valuable saving in manpower has thus been made possible. Under the scheme, military patients in hospitals for neurosis who would probably become ineffective if returned to their original units are given special posts. The neurotic soldier's physical and mental condition, ability and previous experience are all considered by experts, and great pains are taken to find the right job for him, usually with a static unit in Britain. In posting such a man to a selected duty, the medical officer assumes important responsibilities.

The majority of these specially posted neurotic soldiers have proved to be efficient when put in a suitable environment and given the right work. The guiding principles are genuine interest combined with sympathetic but firm treatment. The first weeks of the new posting are often critical. The man may report sick or feel insecure and friendless. It is for the medical officer to relieve that feeling, not by coddling the man or protecting him from all regimental duties, but by encouraging him in the belief that his duties are important and within his powers. Under no circumstances should men be employed in duties other than those recommended.

Marriages

Louis Schwartz, Tupper Lake, N. Y., to Miss Julia F. Déchand of North Ashford, Conn., January 31.

Henry Gunter Hodo Jr. to Miss Naomi Brock, both of Birmingham, Ala., March 15.

Rosario A. Fisichella to Miss Theresa Loretta Chirico, both of Brooklyn, April 16.

Louis S. Constine Jr. to Miss Nancy Jane Meyer, both of San Francisco, March 19.

Salvatore Cucinotta to Miss Helen Murrin, both of Philadelphia, February 21.

Deaths

Virgil Earl Simpson ✠ Louisville, member of the House of Delegates of the American Medical Association, died May 3, aged 68.

Dr. Simpson was born in Jefferson County, Ky., May 11, 1875. He studied in the common school and the Danville normal school, graduating at the Hospital College of Medicine in 1900. For a time Dr. Simpson had been teacher in the local high school. He joined the faculty of the University of Louisville Medical Department as instructor in pharmacology and therapeutics in 1902. He subsequently served as associate professor, professor of materia medica, therapeutics and hygiene and professor of clinical medicine. He was a member of the staff of the Louisville City Hospital, serving as consultant to Norton Memorial and St. Joseph's infirmaries, Baptist, St. Anthony's hospitals. A member of the founder's group of the American Board of Internal Medicine, he had also been certified by it in gastroenterology.

Dr. Simpson had served in the House of Delegates of the American Medical Association in 1913 and again from 1932 to 1943; he would have served at the 1944 session. He had been a member of the American Heart Association, American Gastroenterological Association, Southern Medical Association and the Kentucky State Medical Association. He was a fellow of the American Medical Association and American College of Physicians and a member of the Revision Committee of the U. S. Pharmacopeia.

A captain in the medical corps of the Kentucky National Guard from 1911 to 1917, Dr. Simpson held the rank of major in the medical corps of the U. S. Army, 1918-1919, during which period he served as commanding officer of Camp Hospital number 8 at Montigny le Roi, France.

Cassius Clay Rogers ✠ Chicago; Rush Medical College, Chicago, 1896; formerly professor and head of the department of surgery at the Chicago College of Medicine and Surgery, professor and head of the department of physical diagnosis at the Chicago College of Dental Surgery and associate professor of surgery at the University of Illinois College of Medicine; a major and surgeon with the first Illinois Reserve Militia and member of the exemption board number 39 of the Selective Service during World War I; formerly a member of the hospital corps of the second regiment, Illinois National Guard; appointed a first lieutenant in the medical reserve corps of the U. S. Army in February 1911 and resigned in 1915; director and chairman of the staff and vice president, Garfield Park Community Hospital; on the staff of the University Hospital; fellow of the American College of Surgeons; member of the Chicago Surgical Society, Association of Military Surgeons of the United States, Chicago Historical Society and the Chicago Athletic Club; life member of the Art Institute and the Field Museum; received the honorary degree of master of arts in 1908 and doctor of laws in 1914 from Valparaiso University; died in the Grant Hospital April 21, aged 74, of heart disease.

Frederick Wilkinson Colburn, Boston; Boston University School of Medicine, 1897; member of the Massachusetts Medical Society; since 1934 professor emeritus of otology at his alma mater, where he had been assistant in otology, instructor in otology, lecturer in otology, associate professor of otology, associate professor of clinical otology and professor of otology; fellow of the American College of Surgeons; assistant aural surgeon in 1904 at the Massachusetts Homeopathic Hospital and later aural surgeon; consulting aural surgeon for many years and formerly chief aural surgeon at the Massachusetts Memorial Hospitals; during World War I secretary of the medical advisory board 41 B; died April 9, aged 73, of cerebral hemorrhage.

Alexander Heron Davisson ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1892; past president of the Philadelphia Association of Medical Examiners; a fellow of the College of Physicians of Philadelphia; for many years examining physician for the Metropolitan Life Insurance Company; a captain in the medical corps of the U. S. Army during World War I; served as secretary of the Society of the Medical Alumni of the University of Pennsylvania; formerly on the staff of Rush Hospital for Consumption and Allied Diseases; died in the United States Naval Hospital February 29, aged 74, of coronary thrombosis.

Ernest Archibald Campbell, Gallup, N. M.; University and Bellevue Hospital Medical College, New York, 1903; member of the New Mexico Medical Society; formerly professor of clinical surgery at the New York Post-Graduate Medical School and Hospital, Columbia University, New York; served in France during World War I; for many years medical officer of the 104th field artillery, New York National Guard; formerly attending surgeon at the New York Post-Graduate Medical School and Hospital and the Misericordia Hospital, New York; on the staff of the Zuni Indian Hospital, Black Rock; died April 19, aged 64.

Hulett Hall Askew ✠ Atlanta, Ga.; Emory University School of Medicine, Atlanta, 1918; served as vice president of the Medical Association of Georgia and as secretary and treasurer of the Fifth District Medical Society; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; associate fellow of the American Proctologic Society; team physician for the Georgia "Tech" Yellow Jackets; proctologist, Piedmont Hospital, Grady Hospital, Emory University Hospital, Georgia Baptist Hospital and the Crawford W. Long Memorial Hospital, where he died February 20, aged 51, of coronary thrombosis.

Jerry D. Adkins, Williamsburg, Ky.; Hospital College of Medicine, Louisville, 1891; at one time served as postmaster, and Whitley County school teacher; for many years surgeon for the Louisville and Nashville Railroad; died February 22, aged 81, of pneumonia.

Wesley Willis Beauchamp, Lima, Ohio; Starling Medical College, Columbus, 1895; member of the Ohio State Medical Association; first president of the old Lima Medical Society and a past president of the Academy of Medicine of Lima and Allen County; past president and councilor of the Northern Tri-State Medical Association; on the staff of St. Rita's Hospital and honorary member on the staff of the Lima Memorial Hospital, where he died February 26, aged 80, of myocarditis.

John Claude Bertram, Jamestown, Tenn.; University of Tennessee College of Medicine, Memphis, 1918; member of the Tennessee State Medical Association; served in the medical corps of the U. S. Navy during World War I; died February 1, aged 52.

Robert Garnett Bledsoe, Locustgrove, Va.; University College of Medicine, Richmond, 1896; member of the Medical Society of Virginia; died in the Mary Washington Hospital, Fredericksburg, February 2, aged 75.

John Frederick Bolton ✠ Tulsa, Okla.; Washington University School of Medicine, St. Louis, 1904; member of the chamber of commerce of Tulsa; on the staff of St. John's Hospital, where he died March 27, aged 64, of coronary thrombosis.

Robert Taylor Brown, Millbury, Mass.; Kansas City University of Physicians and Surgeons, 1936; served as a first lieutenant in the medical corps, Army of the United States; died in Worcester January 12, aged 37.

Robert Columbus Bruce ✠ Greenville, S. C.; Vanderbilt University School of Medicine, Nashville, Tenn., 1910; past president of the South Carolina Medical Association and councilor of the Fourth District; past president and secretary of the Greenville County Medical Society; chairman of the city health department; on the staffs of the Greenville General and St. Francis hospitals; died April 9, aged 67, of cerebral hemorrhage, hypertension and myocarditis.

William Campbell ✠ Valley City, N. D.; University of Manitoba Faculty of Medicine, Winnipeg, Man., Canada, 1927; diplomate of the National Board of Medical Examiners; served with the Canadian forces overseas during World War I; formerly chairman of the Barnes County chapter of the American Red Cross; on the staff of the Mercy Hospital; died February 21, aged 46, of carcinoma of the rectum.

Howard Damon Chapman, Auburn, N. Y.; Syracuse University College of Medicine, 1902; member of the Medical Society of the State of New York; examining physician for draft board number 489; on the staffs of the Mercy and Auburn City hospitals; died February 22, aged 73, of chronic myocarditis and coronary thrombosis.

William Jesse Chapman, Doddsville, Miss.; University of Nashville (Tenn.) Medical Department, 1901; died in the Baptist Memorial Hospital, Memphis, Tenn., February 1, aged 64.

Alcee M. Charlet, Belle Alliance, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1891; member of the Louisiana State Medical Society; died February 11, aged 73, of coronary occlusion.

Lawrence Milton Chase, North Carver, Mass.; Tufts College Medical School, Boston, 1904; member of the Massachusetts Medical Society; died February 8, aged 60.

Claude C. Chick, Hood River, Ore.; American Medical College, Indianapolis, 1897; formerly secretary of the Mid-Columbia Medical Society; served as county and city health officer; died February 26, aged 68, of heart disease.

John Holden Clancey, Naperville, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1897; for forty-three years house physician for St. Joseph Orphanage at Lisle; on the staff of St. Charles Hospital, Aurora, where he died February 18, aged 78, of cerebral hemorrhage.

Willis Earl Clarke, Boston; Tufts College Medical School, Boston, 1912; member of the Massachusetts Medical Society; served as a first lieutenant in the medical corps of the U. S. Army during World War I; instructor in otolaryngology at his alma mater; on the staff of Cambridge City Hospital, Cambridge, Mass., and a lecturer for many years at the Boston Dispensary; died in the Carney Hospital February 23, aged 56.

Edward J. Cook, Baltimore; Southern Homeopathic Medical College, Baltimore, 1907; on the visiting staffs of the Bon Secours and St. Joseph's hospitals; died February 6, aged 59, of coronary thrombosis.

William Marshall Cunningham, Cumberland Furnace, Tenn.; University of Tennessee Medical Department, Nashville, 1910; died February 24, aged 56, of hypertension.

Carl Eduard Curdts ✠ Oakland, Calif.; College of Physicians and Surgeons of San Francisco, 1900; served during World War I; major, medical reserve corps, U. S. Army, not on active duty; for forty-one years county jail physician; staff member of the Merritt and Providence hospitals; died February 27, aged 68, of cerebral hemorrhage and arteriosclerosis.

Frank Brannon DeWitt, Santa Cruz, Calif.; University of Tennessee Medical Department, Nashville, 1899; served during the Spanish-American War and World War I; on the staffs of various Veteran Administration facilities; died in February, aged 70.

Martha Cleveland Dibble, Kansas City, Mo.; Woman's Medical College, Chicago, 1885; member of the American Association of University Women; died February 6, aged 98, of chronic myocarditis.

Maurice Francis Dwyer ✠ Seattle; St. Louis University School of Medicine, 1914; specialist certified by the American Board of Radiology, Inc.; member of the Radiological Society of North America, Inc., and the American College of Radiology; fellow of the American College of Physicians; radiologist, Mason Clinic and the Virginia Mason Hospital, where he died February 28, aged 54, of hypertensive cardiovascular disease and cerebral hemorrhage.

Christian Johan Engelson, Brookings, S. D.; Denver and Gross College of Medicine, 1905; member of the South Dakota State Medical Association; died in the Municipal Hospital January 18, aged 83, of carcinoma.

Abraham Julius Epstein, New York; University and Bellevue Hospital Medical College, New York, 1914; member of the Medical Society of the State of New York; on the staff of the Lincoln Hospital; died February 10, aged 59, of pneumonia.

Albert F. Erb, Clarence, N. Y.; University of Buffalo School of Medicine, 1890; died in Cleveland Heights, Ohio, February 28, aged 95, of cerebral hemorrhage.

Gaetano Faillace ✠ Boston; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1903; in 1920 decorated by the Italian government for outstanding professional services among Italians and Italo-Americans in Boston and New England; died February 19, aged 71, of cerebral thrombosis and arteriosclerosis.

John Henry Fallon ✠ Schenectady, N. Y.; Albany Medical College, Albany, 1897; city physician; died in the Ellis Hospital February 28, aged 67, of coronary occlusion.

Floyd Emerson Fielding, Peoria, Ill.; University of Louisville (Ky.) School of Medicine, 1926; formerly health officer of Bloomington; died in the John C. Proctor Hospital February 19, aged 42, of pneumonia.

J. Delbert Foor, Terre Haute, Ind.; Medical College of Indiana, Indianapolis, 1900; formerly a member of the state legislature; died February 4, aged 72.

George Woodson Gaines ✠ Tallulah, La.; University of Tennessee Medical Department, Nashville, 1888; Bellevue Hospital Medical College, New York, 1890; died in Vicksburg, Miss., February 27, aged 81, of uremia due to influenza.

James Garcia, Del Norte, Colo.; University of Colorado School of Medicine, Boulder, 1907; member of the Colorado State Medical Society; on the staff of St. Joseph's Hospital and Sanitarium; died February 20, aged 70, of heart disease.

Joseph George ✠ Dows, Iowa; Rush Medical College, Chicago, 1895; died February 28, aged 72, of chronic nephritis and cerebral hemorrhage.

Charles Erastus Green, Brooklyn; Baltimore University School of Medicine, 1901; Albany Medical College, Albany, 1905; died February 18, aged 67.

George F. Hannah, Maryville, Tenn.; Tennessee Medical College, Knoxville, 1899; died in February, aged 67.

Amy G. Bowen Hittell, Pacific Grove, Calif.; Hahnemann Medical College, San Francisco, 1886; College of Physicians and Surgeons, Boston, 1894; died in the Wheeler Hospital, Gilroy, February 10, aged 79.

Joseph Davis Horton, Plevna, Kan.; Hospital College of Medicine, Louisville, Ky., 1893; member of the Kansas Medical Society; served on the city council and board of education; on the visiting staff of the Grace Hospital, Hutchinson; died February 14, aged 77, of coronary arteriosclerosis.

Elza Lee Johnston, Concordia, Mo.; University Medical College of Kansas City, Mo., 1911; member of the Missouri State Medical Association; past president and secretary-treasurer of the Lafayette County Medical Society; a lieutenant in the medical corps of the U. S. Army during World War I; served as coroner of Lafayette County; died February 24, aged 59, of cerebral hemorrhage.

William Humphrey Johnston, Collins, Ohio; Western Reserve University Medical Department, Cleveland, 1889; served as a member and president of the Townsend township district school board; died in Norwalk January 26, aged 87, of chronic myocarditis, chronic valvular disease and aortic insufficiency.

Jacob N. Lane, Tulsa, Okla.; Chattanooga (Tenn.) Medical College, 1905; died February 7, aged 65.

Joseph McChesney, Portland, Ore.; College of Physicians and Surgeons, New York, 1881; died in the Good Samaritan Hospital February 20, aged 85, of coronary thrombosis.

Ambrose Virgil McRee, Mayfield, Ky.; Illinois Medical College, Chicago, 1900; died in Mena, Ark., February 28, aged 82, of chronic myocarditis and bronchopneumonia.

George P. Maxwell, San Benito, Texas; Ohio Medical University, Columbus, 1898; died January 20, aged 82.

Caspar Morris, Haverford, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1878; member of the Medical Society of the State of Pennsylvania; formerly on the staffs of the Pennsylvania Hospital and Hospital of the Protestant Episcopal Church, Philadelphia; for many years chief medical examiner for the Philadelphia and Reading Railway; died February 29, aged 86.

William Russell Munson, Westport, Conn.; Baltimore University School of Medicine, 1892; member of the Connecticut State Medical Society; for many years health officer of Westport; on the staff of the Norwalk General Hospital, Norwalk; at one time assistant superintendent of the Westport Sanitarium; died in Bridgeport February 17, aged 78.

Dan Royall Murchison ✠ Dallas, Texas; University of Virginia Department of Medicine, Charlottesville, 1911; on the staff of the Medical Arts Hospital; medical director of the Great National Life Insurance Company; died February 16, aged 56, of coronary occlusion.

William Briggs Nichols, Philadelphia; Medical College of Virginia, Richmond, 1895; died February 28, aged 71, of cardiorenal disease.

John Overton ✠ Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1905; since 1927 health officer of Nashville; at one time assistant demonstrator of anatomy and assistant to chair of gynecology at his alma mater; formerly physician at the state prison and in the service of the U. S. government at Manila and Shanghai; died in the Nashville General Hospital February 26, aged 63.

Anna Mary Chipman Palmer, Milton, Mass.; Boston University School of Medicine, 1888; member of the Massachusetts Medical Society and the American Society for the Control of Cancer; died in the Hahnemann Hospital, Boston, February 11, aged 86, of pulmonary edema following cerebellar thrombosis.

George William Puerner, Buffalo; University of Buffalo School of Medicine, 1907; died in the Edward J. Meyer Memorial Hospital January 16, aged 62, of pulmonary tuberculosis.

Harry Reath Ross ✠ Topeka, Kan.; Medico-Chirurgical College of Kansas City, Mo., 1900; medical consultant and for many years served as director of the division of child hygiene for the Kansas State Board of Health; formerly health officer of Junction City and Geary County; served on the staff of the Sterling Hospital, Sterling; died suddenly April 10, aged 74, of coronary thrombosis.

Louis Irwin Schulman ✠ Pittsburgh; University of Pittsburgh School of Medicine, 1925; senior assistant, department of metabolism, Montefiore Hospital; died February 2, aged 42, of wounds received when shot by a patient.

Adele E. Sheplar, New York; Woman's Medical College of Pennsylvania, Philadelphia, 1909; member of the Society of American Bacteriologists; assistant professor of bacteriology at the New York Post-Graduate Medical School, Columbia University; associate attending bacteriologist at the New York Post-Graduate Hospital, where she died February 10, aged 60.

William Irvin Simpson, Los Angeles; Rush Medical College, Chicago, 1899; died February 22, aged 70, of cerebral hemorrhage.

Duncan Sinclair, Buffalo; Victoria University Medical Department, Coburg, Ont., Canada, 1887; formerly member of the board of health of North Tonawanda, N. Y.; died February 16, aged 81, of cerebral hemorrhage.

Charles Robert Slater, Erlanger, Ky.; Medical College of Ohio, Cincinnati, 1881; member of the Kentucky State Medical Association; for many years member of the county board of health and surgeon for the Southern Railroad; died in Tampa, Fla., February 5, aged 83, of Adams-Stokes' syncope, complete heart block and coronary heart disease.

Frank Thomas Spellissy ✠ Marlboro, Mass.; Tufts College Medical School, Boston, 1919; on the staff of the Marlborough Hospital; died February 4, aged 48, of coronary thrombosis.

S. Walter Staley, Rocky Mount, N. C.; Medical College of the State of South Carolina, Charleston, 1901; member of the North Carolina Medical Association; on the staff of the Park View Hospital, where he died February 11, aged 70, of pneumonia.

Thomas Stark ✠ Thibodaux, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1891; formerly a druggist; sheriff of La Fourche Parish; served as coroner; at one time a member and later president of the parish school board; died February 10, aged 78.

Herman Ernest Stephen ✠ Joliet, Ill.; Northwestern University Medical School, Chicago, 1899; a member of the office of civilian defense; on the staffs of the Silver Cross Hospital and St. Joseph's Hospital, where he died February 22, aged 67, of coronary occlusion.

John P. Stober, Lexington, Ohio; Homeopathic Hospital College, Cleveland, 1889; served as village and township health officer; a charter member of the county board of health; died January 28, aged 81, of coronary infarct.

Dudley Hayden Swan, Plainville, Ind.; Hospital College of Medicine, Louisville, Ky., 1900; member of the Indiana State Medical Association; at one time taught school in Pike and Gibson counties; served for one term as Gibson County treasurer; on the staff of Daviess County Hospital, Washington, where he died February 20, aged 75, of cerebral hemorrhage.

Ormiston W. Swayze, Nevada City, Calif.; Homeopathic Hospital College, Cleveland, 1889; died in the Nevada County Hospital February 8, aged 75, of influenza.

Ira Singleton Taylor, Tunica, Miss.; Chattanooga (Tenn.) Medical College, 1905; member of the Mississippi State Medical Association; died February 14, aged 64, of heart disease.

Roy Connell Thompson ✠ Wilton, N. D.; Trinity Medical College, Toronto, Ont., Canada, 1900; at one time county health officer and member of the city council; died in Bismarck February 8, aged 67, of cerebral hemorrhage.

Edward Roswell Utley, Boston; Harvard Medical School, Boston, 1891; formerly city physician of Newton, Mass., member of the board of health, prison physician, Middlesex County, Mass., and chief of the medical staff of the Newton Hospital; died February 14, aged 81.

Crawford C. Wilson, Winter Haven, Fla.; University of the City of New York Medical Department, New York, 1888; died February 5, aged 82, of myocarditis and nephritis.

Raleigh Jack Wilson, Bailey, Miss.; University of Nashville (Tenn.) Medical Department, 1907; member of the Mississippi State Medical Association; died in Rush's Infirmary, Meridian, February 15, aged 61, of cardiac asthma.

DIED WHILE IN MILITARY SERVICE

Thomas Brabson Drinnen, Knoxville, Tenn.; University of Tennessee College of Medicine, Memphis, 1933; member of the Tennessee State Medical Association; served on the staffs of the Knoxville General and Fort Sanders hospitals; commissioned a first lieutenant in the medical corps, Army of the United States, June 10, 1942; later promoted to captain; died in European area February 24, aged 35, of carbon monoxide poisoning.

Myron Richard Halsbond, Far Rockaway, N. Y.; University of Louisville (Ky.) School of Medicine, 1939; commissioned a first lieutenant in the medical corps, Army of the United States, on June 2, 1942; later promoted to captain; died in the European area Dec. 12, 1943, aged 32, of accidental carbon monoxide poisoning.

Nathan Wicker Hylan, Derry Village, N. H.; Tufts College Medical School, Boston, 1935; major, medical reserve corps, U. S. Army; commissioned a first lieutenant on May 28, 1941; a flight surgeon in the air corps; died in England January 28, aged 36, of injuries received in a parachute accident.

Jerome Konigsberg, San Francisco; University of California Medical School, San Francisco, 1936; member of the California Medical Association; served as clinical assistant in medicine at his alma mater; formerly on the staff of the Mount Zion Hospital; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on May 23, 1936; called to active duty on Nov. 1, 1940; promoted to captain; died in Sydney, Australia, February 4, aged 35, of carcinoma of the liver.

Charles Byron Korns Jr., Derry, Pa.; Jefferson Medical College of Philadelphia, 1937; member of the Medical Society of the State of Pennsylvania; formerly on the staff of the Latrobe Hospital, Latrobe; commissioned a first lieutenant in the medical corps, Army of the United States, on April 13, 1943; accidentally drowned January 26, while in the Bahama Islands, aged 32.

Richard Francis Northrop, Melrose Park, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1931; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on Dec. 15, 1939; later promoted to captain; died suddenly in Framingham, Mass., March 12, aged 37, of disease of the coronary arteries.

Milton Ross Ort, Columbus, Ohio; Indiana University School of Medicine, Indianapolis, 1938; major, medical reserve corps, U. S. Army; commissioned in 1938 with the rank of first lieutenant; was attached to the navy command under Admiral Halsey; died in the South Pacific area, February 17, of third degree burns received in an explosion and fire when he stepped on the starter of a vehicle, aged 39.

Samuel Gerard Rosenfeld ✠ Brooklyn; Université de Lausanne Faculté de Médecine, Switzerland, 1935; on the staff of the New York Post-Graduate Medical School and Hospital, New York, where he served in the department of allergy; commissioned a first lieutenant in the medical corps, Army of the United States, on Oct. 19, 1942; began extended active duty on Nov. 3, 1942 and assigned to the 98th Evacuation Hospital, Camp Shelby, Miss.; later promoted to captain; killed in an airplane accident 17 miles south of Memphis, Tenn., February 10, aged 34.

William Warner Samuelsen, Brooklyn; Long Island College of Medicine, Brooklyn, 1936; member of the Medical Society of the State of New York; served on the staffs of the Norwegian Lutheran Deaconesses' Home and Hospital and the Kings County Hospital; commissioned a lieutenant (jg) in the medical corps of the U. S. Naval Reserve in July 1942 and later promoted to lieutenant; died in the Southwest Pacific area Dec. 19, 1943, aged 32, of injuries received in an airplane accident.

Charles Blake Skinner, Yonkers, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1941; School of Tropical Medicine, Walter Reed Hospital, Washington, D. C., 1943; began extended active duty as a first lieutenant in the medical corps, Army of the United States, on Aug. 17, 1942; later promoted to captain; a battalion surgeon; attached to the 137th infantry; accidentally drowned March 23, aged 28, near Davis, W. Va., in a heroic attempt to save the life of an enlisted man.

Correspondence

THE CONCEPT OF ORGANIC UNITY AND PSYCHOSOMATIC MEDICINE

To the Editor:—Within the past few years psychosomatic medicine has held increasing interest by the entire profession. It has made considerable advances and is undergoing rapid further development. It is important that the formulations it employs be clear and correct.

In his article "The Concept of Organic Unity and Psychosomatic Medicine," which appeared in THE JOURNAL March 18, Dr. George Draper emphasizes the unity of the psychosomatic organism. In his argument Dr. Draper sets down the definition "The term 'psyche' in relation to disease connotes that quality which distinguishes a living cell or organism from a dead one. It springs with the first impregnate cell, and from the first division permeates every tissue of the entire creature, just as it vanishes in death. Psyche, therefore, is the life force. . . . Hence, in conjunction with innumerable agents of environment, the vivified or psychefied protoplasm becomes one of the two essential factors which together produce different aspects of health and disease." He goes on to say "If we accept this definition of psyche, then there remains no question of the unity of the organism."

Though such a definition of psyche has the appearance of simplicity, it generates confusion; and though it seems inclusive, it really excludes a great deal.

Dr. Draper, even while attempting to dissolve the dichotomy between psyche and soma (traditionally called mind and body), tacitly adopts the concepts of the dualists. Thus he cannot avoid dualism in the end. He does not do away with the dichotomy, he merely displaces it, so that it now rests between an ever so broad psyche, which is equated with life, and a narrow soma, which becomes but the material residue of death.

This overextended concept of psyche is almost meaningless and its outcome is different from that which Dr. Draper intends. For example, a logical corollary of it would be that all disease is psychogenic. For if psyche is the "life force"—that quality which distinguishes a living organism from a dead one—then the soma becomes merely the substrate of the psyche, merely its mode; and disease, which is after all the reaction of a living organism, becomes psychic. This hovers close to philosophic spiritualism.

The abolition of the dualism which has hampered the development of psychosomatic medicine does not consist merely in taking from soma to give to psyche, as Dr. Draper has done, but rather in recognizing the true nature of the relation between the mind and the body. The central process is unitary but it is not simple. Though the psyche is rooted in the biologic being, it emerges into ever more complex levels of physiologic, personal and social integration. Ultimately the living organism must be conceived as proceeding on many different and interacting levels of integration at once.

Further, the definition is inadequate from the utilitarian point of view. The qualitative reduction of the psyche into the life force constitutes an impoverishment of the entire organism. It leads to the abolition of useful distinctions not only between psyche and soma but also between different levels of integration within the psyche. The physician must remain aware of these differences in order to find a practical avenue of approach to his patient. In order successfully to manipulate the psyche he must remain cognizant of its fulness and complexity.

I would suggest that the formulation of the psychosomatic problem be such as will (1) avoid dichotomy in any form and emphasize the unity of the organism, (2) recognize the emergent nature of the psyche and (3) maintain useful distinctions at all levels of emergence. At this stage of the development of psychosomatic medicine it is my impression that its formulations might well be flexible working hypotheses subject to modification from empirical sources, the final definition to come at the conclusion of an investigation rather than at its beginning.

These remarks are intended as a plea for clarity and correctness of approach in a new and promising field of medicine. History has too often demonstrated how "academic" oversights may have grave practical consequences.

JACK NELSON, M.D., New York.

[When shown a copy of Dr. Nelson's communication, Dr. Draper replied:]

To the Editor:—That the article "The Concept of Organic Unity and Psychosomatic Medicine" has provoked so penetrating and thoughtful a discussion as that of Dr. Nelson is a gratification. It was precisely the author's hope and purpose to elicit notions pro and con concerning the need of a dualistic adjective qualifying the great discipline of medicine; for the latter has always striven to encircle the presenting phases termed mind and body, as well as to uncover their biologic foundation.

By focusing his remarks on the definition of "psyche," Dr. Nelson has perhaps reopened the age old discussion of what he himself refers to as "philosophic spiritualism." The earlier sections of the paper, however, which he passed over, strove to deal with the biologic qualities of different protoplasms. They at least possess demonstrable chemical structures whose interactions are related to the transmutation of cosmic energy. Chemical changes in these protoplasms have long been linked with shifts of mood, as "liverish" and "out of sorts," the "melancholic," and so on. Moreover, it was suggested that insulin or electric shock could only produce convulsion in protoplasm. And following that phenomenon the "psychic" state might change again.

Dr. Nelson's defense of the two pronged word is a defense of the ancient assumption of a mind (up there in the brain) and body (down here in the flesh and blood). I agree with him that the central process is unitary and inexpressibly complex. For that reason the problem would seem to be best approached from the biochemical point of view so that, instead of treacherous word connotations, we may hope finally to comprehend the man within the patient on a basis of demonstrable biologic phenomena.

GEORGE DRAPER, M.D., New York.
Columbia University College of Physicians and Surgeons.

ESTIVOAUTUMNAL MALARIA

To the Editor:—Having just read the first article in THE JOURNAL of January 8, which deals with estivoautumnal malaria and which was presented by Drs. Harry Most and Henry E. Meleney, I hasten, as a veteran practitioner in this branch of medicine, to warn against the recommendations on their part of intravenous quinine therapy. It is amusing to note that a former assistant of mine, namely Dr. Wendell S. Dove, who is at present serving as a lieutenant colonel in our army somewhere in the Mediterranean, presented an article (*Am. J. Trop. Med.* **22**:227 [May] 1942) wherein he stated that it was his firm conviction that intravenous quinine therapy was never indicated under any circumstances. I believe he received his first shock when about seventeen years ago he saw a child, the daughter of a veterinarian, die just after I had given intravenous quinine with saline and dextrose solution. The child had been ill quite a few days before treatment was begun, and even the thin smear showed a very heavy Plasmodium falciparum infection and a decidedly reduced red blood cell count together with a high percentage of Schilling's youth forms in the neutrophilic leukocyte count, which augured very poorly from a prognostic standpoint.

This clash in opinions of the apparently serious minded enthusiasts from such opposite poles of thought would induce any conservative person to follow a sort of midchannel course, if I may be pardoned in the event that my metaphors may be a trifle mixed, and this recommendation precisely constitutes the definite purpose of the present communication.

I cannot too strongly advise that intravenous quinine therapy is a serious and dangerous form of treatment and should be administered only when absolutely necessary. When it is decided that this form of treatment is definitely indicated, the quinine should be given in small doses (not more than one ampule of the dihydrochloride, 7½ grains, or 0.5 Gm., at a time) well diluted in a slightly hypertonic saline and dextrose solution, about 300 cc., and should be injected very slowly.

In heavy infections of estivoautumnal malaria there is danger that intravenous quinine might, disastrously for the patient, destroy too many parasites too quickly. It is not easy to know exactly when intravenous quinine is definitely indicated. Long experience in this phase of medicine alone can guide one's judgment, together with giving due consideration to the personal equation factor. It is most often indicated in certain of the cerebral and cardiac forms in which symptoms of parasitic emboli are manifested or when the patient is in coma or semicomatose or when pronounced delirium, tetanic signs, cyanosis, definite diaphoresis, certain psychoses or even temporary paralysis complicates the clinical picture. I had the honor of reporting 2 such unusual cases in THE JOURNAL, Jan. 13, 1917 and Sept. 13, 1924.

For the simple bilious remittent type, which is the least dangerous of all the pernicious forms of the subtertian type, large intramuscular injections give the best results and are safest. Because of the constant vomiting this condition cannot be treated orally and the drug must be injected. Large adults have had to be given as many as three and four intramuscular injections of from 15 to 22½ grains (1 to 1.5 Gm.) each of the dihydrochloride within a space of twenty-four hours. These should be given, of course, by nurses who have been specially trained.

Because it is considered that the yellowish discoloration of the skin other than that caused by hematogenous or hepatogenous jaundice in these cases is attributable to adrenal degeneration, which is a part of the general cloudy swelling of all the viscera, epinephrine had best be administered with the quinine in both intravenous and intramuscular injections. It is also quite recommendable that forms of malarial therapy other than the quinine had best be preceded by quinine. I brought this out in an article (*Am. J. Trop. Med.* **5**:27 [Jan.] 1925) in which I mentioned that malaria could be treated with neoarsphenamine after about a week of quinine administration; and more recently (*Ann. Int. Med.* **12**:353 [Sept.] 1938) I advised that even a course of atabrine treatment might be enhanced by a few days of preliminary quinine therapy.

The best forms of quinine, of course, are the hydrochloride, the dihydrochloride and the bisulfate. The sulfate tablets and the comparatively tasteless ethyl carbonate have a much lower degree of solubility but also have their distinct advantages.

In concluding I want also to stress the fact that too little attention is given to plasmochin. This because of its gametocidal properties and therefore for prophylactic reasons should be administered in small doses with quinine or atabrine treatment when these drugs can be given orally. For reference I might offer publications regarding plasmochin which were submitted in annual reports of the United Fruit Company's Medical Department from 1926 to 1930.

OTTO TIEMANN BROSIUS, MD., D.T.M.&H.,
Santa Marta, Colombia.
Superintendent, Medical Department,
Magdalena Fruit Company.

[NOTE.—The letter was referred to Dr. Most, who replies:]

To the Editor:—The controversy between the advocates of intravenous and intramuscular quinine is a long one. However, we believe that the indications for intravenous quinine in falciparum malaria are clearly defined. It is recognized that intravenous quinine given improperly is a dangerous procedure. Not only are the cautions emphasized but the indications for intravenous quinine are clearly stated in the paper in question. Further, the senior author has himself administered well over one thousand doses of quinine intravenously to patients seriously ill with falciparum malaria and has experienced no ill effects which could be attributable to the use of quinine by vein.

HARRY MOST, Captain, M. C., Memphis, Tenn.
Chief of Malaria Section, Kennedy General Hospital.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, May 6, page 83.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, Oct. 24-26. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.
ALASKA: Juneau, September 5. Sec., Dr. W. M. Whitehead, Box 561, Juneau.
ARKANSAS:* *Eclectic.* Little Rock, June 8. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.
CALIFORNIA: San Francisco, June 27-29 Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento.
CONNECTICUT:* *Written.* New Haven, July 11-12. *Endorsement.* New Haven, July 25. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic.* Derby, July 11-12. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.
DELAWARE: Dover, Oct. 10-12. Sec., Medical Council of Delaware, Dr. J. S. McDaniel, 229 S. State St., Dover.
FLORIDA:* Jacksonville, June 26-27. Sec., Dr. W. M. Rowlett, Box 786, Tampa.
HAWAII: Honolulu, July 10-13. Sec., Dr. J. A. Morgan, 55 Young Bldg., Honolulu.
IDAHO: Boise, July 11. Dir., Bureau of Occupational Licenses, Mrs. Lela D. Painter, 355 State Capitol Bldg., Boise.
IOWA:* Iowa City, Sept. 25-27. Dir. Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.
KANSAS: November. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.
KENTUCKY: Louisville, Sept. 11-12. Sec., State Board of Health, Dr. Philip E. Blackerby, 620 S. Third St., Louisville.
MARYLAND: *Medical.* Baltimore, June 13-16. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, June 20-21. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.
MASSACHUSETTS: Boston, July 11-14. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413 F State House, Boston.
MICHIGAN:* Ann Arbor, July. Sec., Board of Registration in Medicine, Dr. J. E. McIntyre, 100 W. Allegan St., Lansing.
MISSISSIPPI: Jackson, May 29-30. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.
MISSOURI: St. Louis, August. Sec., State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.
NEW JERSEY: Trenton, June 20-21. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.
NEW YORK: Albany, Buffalo, New York City and Syracuse, June 26-29. Sec., Dr. R. R. Hannon, Education Bldg., Albany.
NORTH CAROLINA: Raleigh, September. Sec., Dr. W. D. James, Hamlet.
NORTH DAKOTA: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.
OHIO: *Endorsement.* Columbus, July 4. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.
OKLAHOMA:* Oklahoma City, Sept. 16. Sec., Dr. J. D. Osborn, Jr., Frederick.
OREGON:* Portland, July. Exec. Sec., Miss L. M. Conlee, 608 Failing Bldg., Portland.
SOUTH CAROLINA: Columbia, June 26-28. Sec., Dr. N. B. Heyward, 1329 Blandena St., Columbia.
TEXAS: Galveston, June 26-28. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas.
VERMONT: Burlington., Sept. 12-14. Sec., Dr. F. J. Lawliss, Richford.
WISCONSIN:* Milwaukee, June 27-29. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls.
WYOMING: Cheyenne, June 5-6. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

COLORADO: Denver, June 7-8. Sec., Dr. E. B. Starks, 1459 Ogden St., Denver.
CONNECTICUT: June 10. Address State Board of Healing Arts, 250 Church St., New Haven 10.
FLORIDA: Gainesville, June 8. Sec., Dr. J. F. Conn, John B. Stetson University, DeLand.
IOWA: Des Moines, July 11. Dir., Division of Licensure and Registration. Mr. H. W. Grefe, Capitol Bldg., Des Moines.
NEW MEXICO: Santa Fe, June 12. Sec., Miss Marian M. Rhea, State Capitol Bldg., Santa Fe.

OKLAHOMA: Oklahoma City, July 3. Sec., Dr. J. D. Osborn Jr., Frederick.
OREGON: Corvallis, July 8. Final date for filing application is June 21. Sec., Board of Higher Education, Mr. C. D. Byrne, Eugene.
RHODE ISLAND: Providence, May 17. Sec., Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.
SOUTH DAKOTA: Vermillion, June 4-5. Sec., Dr. G. M. Evans, Yankton.
TENNESSEE: Nashville and Memphis, June 23-24. Sec., Dr. O. W. Hyman, Memphis.
WISCONSIN: Milwaukee, June 3. Sec., Prof. R. N. Bauer, 152 W. Wisconsin Ave., Milwaukee.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Optometry Practice Acts: Licensed Physician May Not Practice as Employee of Unlicensed Persons.—The National Optical Stores Company is a partnership composed of six members of the Ritholz family operating a chain of so-called optical stores in several states. Not one of the partners is "a physician, optometrist, ophthalmologist or in other respects professionally equipped." One of the stores so operated is in Little Rock, Ark. It was claimed by the partners in a suit to enjoin them from practicing optometry in Arkansas through the services of licensed physicians or optometrists, or otherwise, that the business of the Little Rock store was "merchandising; that in effect it sells glasses the way a druggist fills prescriptions for medicine." Newspaper advertising with respect to the store stated "All glasses sold by us are ground by expert optical artisans in our modern laboratory on prescription of a licensed doctor." It appeared also that a licensed physician occupied space in the store for which he ostensibly paid rent. He also had another office off the store premises. This physician examined the eyes of patrons of the store who desired professional attention, charging them one dollar each for the examination and receiving from the store 20 per cent commission on glasses sold by the store on his prescription. Apparently his "practice" was limited to patrons of the store. The trial court issued the injunction prayed for, and the Ritholzs appealed to the Supreme Court of Arkansas.

The present action, said the Supreme Court, is not one to enjoin the commission of a crime, as such. Its purpose, primarily, is to prevent the illegal practice of optometry rather than to penalize the practitioner. If the latter alone were the object, chancery would be without jurisdiction. The rule, as stated in 28 American Jurisprudence, page 338, is that acts amounting to a public nuisance will be restrained if they affect the civil or property rights or privileges of the public, or endanger the public health, regardless of whether such acts are denounced as crimes. The contract by which the licensed physician agreed to pay stipulated rental for occupying space in the Little Rock store, prima facie, merely creates the relationship of landlord and tenant. Affirmative expressions were used at the trial in a seeming effort to emphasize what the Ritholzs contend to have been the purpose of their arrangement with the physician—that is, merely to provide convenient office quarters for the physician so that customers of the store might be accommodated if on their own initiative they elected to have professional assistance in instances in which the advice of an optometrist or physician was required. We think, continued the court, the facts in this case are controlled by *Melton* v. *Carter*, 204 Ark. 595, 164 S. W. (2d) 453, where in upholding the constitutionality of the optometry practice act of Arkansas the court said that the legislative object of the act was to prohibit employment of an optometrist by one who is not licensed. In other words, under that decision, "a layman may not engage in the profession by employing a licensed optometrist." The decree entered by the trial court in this case found that the lease agreement was collusive—"A fiction for the agency that exists between the parties," as the chancellor (the trial judge below) expressed it. We think the testimony sustains this finding.

Accordingly, the decree, in effect enjoining defendants from practicing optometry, was affirmed.—*Ritholz v. Arkansas State Board of Optometry, 177 S. W. (2d) 410 (Ark., 1944).*

Society Proceedings

COMING MEETINGS

American Medical Association, Chicago, June 12-16. Dr. Olin West, 585 N. Dearborn St., Chicago 10, Secretary.

American Association for the Surgery of Trauma, Chicago, June 9-10. Dr. Gordon M. Morrison, 520 Commonwealth Ave., Boston, Secretary.

American Association of Genito-Urinary Surgeons, Stockbridge, Mass., June 8-10. Dr. Charles C. Higgins, 2020 E. 93d St., Cleveland, Secretary.

American Association of Plastic Surgeons, Philadelphia, May 25-27. Dr. Frederick A. Figi, 102 Second Ave., S.W., Rochester, Minn., Secretary.

American Association on Mental Deficiency, Philadelphia, May 11-15. Dr. Neil A. Dayton, Mansfield Training School, Mansfield Depot, Connecticut, Secretary.

American Broncho-Esophagological Association, New York, June 6. Dr. Paul H. Holinger, 700 N. Michigan Ave., Chicago, Secretary.

American College of Allergists, Chicago, June 10-11. Dr. Fred W. Wittich, 401 LaSalle Medical Bldg., Minneapolis 2, Secretary.

American College of Chest Physicians, Chicago, June 10-12. Dr. Paul H. Holinger, 500 N. Dearborn St., Chicago, Secretary.

American College of Radiology, Chicago, June 14. Mr. Mac F. Cahal, 540 N. Michigan Ave., Chicago, Secretary.

American Diabetes Association, Chicago, June 11. Dr. Cecil Striker, 630 Vine St., Cincinnati 2, Secretary.

American Federation for Clinical Research, Chicago, June 12-13. Dr. Thomas M. Durant, 3401 N. Broad St., Philadelphia 40, Secretary.

American Gastro-Enterological Association, Chicago, June 12-13. Dr. J. Arnold Bargen, 102 Second Ave. S.W., Rochester, Minn., Secretary.

American Gynecological Society, Hershey, Penna., June 19-21. Dr. Howard C. Taylor Jr., 842 Park Ave., New York 21, Secretary.

American Laryngological Association, New York, June 7-8. Dr. Arthur W. Proetz, 3720 Washington Blvd., St. Louis, 8, Secretary.

American Laryngological, Rhinological and Otological Society, New York, June 9-10. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.

American Medical Women's Association, Chicago, June 10-11. Dr. Carroll L. Birch, 2045 Sedgwick St., Chicago, Secretary.

American Neurological Association, New York, May 19-20. Dr. Henry Alsop Riley, 117 E. 72d St., New York 21, Secretary.

American Ophthalmological Society, Hot Springs, Va., May 29-31. Dr. Walter S. Atkinson, 129 Clinton St., Watertown, N. Y., Secretary.

American Physicians' Art Association, Chicago, June 12-16. Dr. F. H. Redewill, 536 Flood Bldg., San Francisco, Secretary.

American Proctologic Society, Chicago, June 11-15. Dr. W. H. Daniel, 1930 Wilshire Blvd., Los Angeles 5, Secretary.

American Psychiatric Association, Philadelphia, May 15-18. Dr. Winfred Overholser, St. Elizabeth's Hospital, Washington, D. C., Secretary.

American Psychoanalytic Association, Philadelphia, May 13-15. Dr. Robert P. Knight, 3617 W. Sixth Ave., Topeka, Kansas, Secretary.

American Therapeutic Society, Chicago, June 10. Dr. Oscar B. Hunter, 1835 I St. N.W., Washington 6, D. C., Secretary.

American Urological Association, St. Louis, June 19-22. Dr. Thomas D. Moore, 899 Madison Ave., Memphis, 3, Tenn., Secretary.

Association for Research in Ophthalmology, Chicago, June 13. Dr. B. F. Payne, School of Aviation Medicine, Randolph Field, Texas, Secretary.

Association for the Study of Internal Secretions, Chicago, June 12-13. Dr. Henry H. Turner, 1200 N. Walker St., Oklahoma City, Secretary.

Illinois State Medical Society, Chicago, May 16-18. Dr. Harold M. Camp, 224 S. Main St., Monmouth, Secretary.

Maine Medical Association, Rockland, June 25-27. Dr. Frederick R. Carter, 142 High Street, Portland 3, Secretary.

Massachusetts Medical Society, Boston, May 23-24. Dr. Michael A. Tighe, 8 Fenway, Boston 15, Secretary.

New Hampshire Medical Society, Manchester, May 16. Dr. C. R. Metcalf, 5 S. State St., Concord, Secretary.

Rhode Island Medical Society, Providence, May 24-25. Dr. William P. Buffum, 122 Waterman St., Providence 3, Secretary.

Society for Investigative Dermatology, Chicago, June 13. Dr. S. W. Becker, 55 E. Washington St., Chicago, Secretary.

South Dakota State Medical Association, Huron, May 21-23. Dr. Roland G. Mayer, 22½ S. Main St., Aberdeen, Secretary.

West Virginia Medical Association, Wheeling, May 15-16. Mr. Charles Lively, P. O. Box 1031, Charleston, Executive Secretary.

Wyoming State Medical Society, Casper, May 28. Dr. M. C. Keith, Capitol Building, Cheyenne, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

27:145-288 (Feb.) 1944

Orthostatic Tachycardia and Orthostatic Hypotension: Defects in Return of Venous Blood to Heart. A. R. MacLean, E. V. Allen and T. B. Magath.—p. 145.

Electrocardiographic Changes (Local Ventricular Ischemia and Injury) Produced in Dog by Temporary Occlusion of Coronary Artery, Showing a New Stage in the Evolution of Myocardial Infarction. R. H. Bayley, J. S. LaDue and Dorothy Josephy York.—p. 164.

*Graphic Registration of Venous Pressure Taken by Direct Method. J. E. Wood Jr. and K. T. McKee.—p. 170.

Studies on Production and Maintenance of Experimental Auricular Fibrillation. J. R. Smith and K. S. Wilson.—p. 176.

Effect of Thyroid Extract, Adrenalin and Combination of These on Hearts of Intact and Thyroidectomized Rabbits. H. Gross and S. S. Greenberg.—p. 186.

Presence of Electrocardiographic Changes in Nicotinic Acid Deficiency and Their Elimination by Nicotinic Acid. M. Rachmilewitz and K. Braun.—p. 203.

A-V Block in A-V Nodal Rhythm. R. Langendorf, A. J. Simon and L. N. Katz.—p. 209.

Atypical Coarctation of Aorta with Absence of Left Radial Pulse. A. Grishman, M. L. Sussman and M. F. Steinberg.—p. 217.

Electrocardiographic Studies After Surgical Operations on Heart. H. Feil and L. Alperin.—p. 225.

Electrocardiographic Changes in Relation to Tolerance of Sustained Anoxemic Anoxia in Dogs. W. C. Randall.—p. 234.

Sarcoidosis of Heart: Report of Case and Review of Literature. J. B. Johnson and R. S. Jason.—p. 246.

Graphic Registration of Venous Pressure.—Wood and McKee believe that technical difficulties may partially account for the fact that there are few studies of directly measured and graphically recorded venous pressures in human beings. The main obstacle appears to be lack of a suitable mechanical recording device which will register pressures in millimeters of water and be adaptable to sterile technic. The authors give a brief description of a simple apparatus which can be assembled in any hospital laboratory. A convenient adaptation is a sensitive, float-recording manometer which is suitable for pressures of the order required. The apparatus is arranged so that only a portion of it need be sterilized. Venous pressure is recorded on a smoked drum, and a nonrecording water manometer is included in the system to verify values recorded on the drum. The recording manometer may be accurately calibrated, and pressure changes are recorded by a system entirely filled with liquid. The apparatus may be placed on a table and rolled about as desired. The authors made fifty observations on patients with this method and have obtained continuous graphic records of venous pressure over periods of twenty to forty-five minutes. This modification of the method of Moritz and von Tabora permits accurate, graphic registration of venous pressure in man.

American J. Digestive Diseases, Fort Wayne, Ind.

11:31-62 (Feb.) 1944

Effect of Atropine Sulfate, Morphine Sulfate, Pilocarpine Hydrochloride, Prostigmine Methylsulfate, Sodium Salt of Dehydrocholic Acid and Secretin on Gastric and Duodenal Secretions of Normal Persons When Fasting. H. E. King and M. W. Comfort and A. E. Osterberg.—p. 31.

Seasonal Gastroenteritis in Colorado. H. Gauss.—p. 40.

Effect of Lemon Juice on Pepsin Activity Between *p*H 2.4 and 4, Range of Achlorhydria. T. C. Manchester.—p. 43.

Familial Peptic Ulcer Hemorrhage. E. Boros.—p. 45.

Lesions of Small Intestine. H. W. Soper.—p. 47.

Interdigestive Discharge of Duodenal Content in Man. W. V. Berger.—p. 49.

American Journal of Diseases of Children, Chicago

67:89-166 (Feb.) 1944

Initial Aerobic Flora of Newborn (Premature) Infants: Nature, Source and Relation to Ultraviolet Irradiation and Face Masks. J. C. Torrey and Martha K. Reese.—p. 89.

Ketosis in Relation to Hepatic Reserves of Glycogen: Study of Normal and of Diabetic Children. I. A. Mirsky and W. E. Nelson.—p. 100.

Electrocardiographic Variations in Acute Glomerulonephritis. Rachel Ash, M. I. Rubin and M. Rapoport.—p. 106.

Recurrent and Chronic Diarrhea in Infancy and Childhood. J. H. Lapin.—p. 139.

American Journal of Psychiatry, New York

100:443-584 (Jan.) 1944

Schizophrenia and Paranoid Psychoses Among College Students. T. Raphael and L. E. Himler.—p. 443.

Sociological Changes Predisposing Toward Juvenile Delinquency. D. A. Thom.—p. 452.

Technics and Factors Reversing Trend of Population Growth in Illinois State Hospitals. C. Sommer and J. Weinberg.—p. 456.

Appraisal of Personality Types of Addict. R. H. Felix.—p. 462.

Therapeutic Mechanisms of Alcoholics Anonymous. H. M. Tiebout.—p. 468.

Results of Hospital Treatment of Alcoholism. J. H. Wall and E. B. Allen.—p. 474.

Intellectual Impairment in Head Injuries. J. Ruesch.—p. 480.

Frequency of Convulsive Disorders in Feebleminded: Clinical and Pathoanatomic Consideration. R. W. Waggoner and J. G. Sheps.—p. 497.

Role of Premorbid Personality in Arteriosclerotic Psychoses. D. Rothschild.—p. 501.

Study of Casualties Occurring in Institutions Under Supervision of Massachusetts Department of Mental Health. W. W. Jetter and R. V. Hadley.—p. 506.

Psychoanalytic Perspectives. E. A. Strecker.—p. 516.

Freud's Scientific Cradle. F. Wittels.—p. 521.

International Psychiatry in Postwar World. G. H. Stevenson.—p. 529.

American Journal of Surgery, New York

63:151-300 (Feb.) 1944

Bone Grafts to Mandible. G. B. New and J. B. Erich.—p. 153.

Cesarean Section: Rational Use of Operation. D. M. Vickers.—p. 168.

*Carcinoma of Gallbladder: Clinical and Pathologic Study. J. L. Vadheim, H. K. Gray and M. B. Dockerty.—p. 173.

Management of External Biliary Fistula. R. R. Best.—p. 181.

Improved Technic for Closure of Loop Colostomy. J. W. Howser.—p. 187.

Rapid Rehabilitation in Shipbuilding Industry. K. A. Koerber.—p. 192.

Reconstruction of Nasal Tip: New Technic. M. Maltz.—p. 203.

Pyogenic Liver Abscess in the Aged. R. S. Smith.—p. 206.

Right Inguinal Hernia Following Lower Abdominal Incisions: Report of 31 Cases. N. W. Thiessen.—p. 214.

Role of Aseptic Bone Necrosis in Hip Lesions. E. Bergmann.—p. 218.

*Sedation in Patients with Acute Head Injury. E. S. Gurdjian and J. E. Webster.—p. 236.

Ceepryn (Cetylpyridinium Chloride): Clinical and Bacteriologic Studies. G. B. Kramer and S. H. Sedwitz.—p. 240.

Persistence of Pain After Appendectomy. B. Judovich and J. Dunn.—p. 246.

Cardiovascular and Respiratory Effects from Celiac Ganglia Stimulation in Man. S. J. Martin, L. Miscall and E. A. Rovenstine.—p. 259.

Carcinoma of Gallbladder.—Vadheim and his associates state that in 33,500 operations on the biliary tract performed at the Mayo Clinic in the years 1907 to 1940 inclusive there were 291 cases of primary carcinoma of the gallbladder, an incidence of 0.87 per cent. In 77 (26.5 per cent) of these cases removal of the gallbladder or a large portion of the gallbladder was possible. Carcinoma of the gallbladder occurs most frequently in the fifth decade of life and is predominantly a disease of women. Stones were associated with the carcinoma in 88 per cent of cases, and they preceded the development of the carcinoma in 58.5 per cent of these cases. An analysis of the early symptoms revealed nothing which could not be attributed to the presence of chronic inflammation of the gallbladder with or without cholelithiasis. Adenocarcinoma was the type in 85.3 per cent, squamous cell carcinoma in 2.7 per cent and adenoacanthoma (mixed adenocarcinoma and squamous cell carcinoma) in 12 per cent. Three instances of malignant degeneration in a papilloma and 1 in an adenoma were found. The finding of areas of metaplasia in the mucosa and of adenocarcinoma and squamous cell carcinoma in the same tumor lends support to the theory of metaplasia for the origin of squamous cell carci-

noma. Five year cures were obtained in 45 per cent of the cases of carcinoma grade 1, in 4.3 per cent in cases of grade 2 and in none of the cases of carcinoma of the other grades. In no instance was a definite diagnosis made preoperatively.

Sedation in Patients with Head Injury.—Gurdjian and Webster recommend the use of codeine in combination with pentobarbital sodium for the restlessness due to cerebral injury after secondary disturbing factors have been eliminated. Study of the cerebrospinal fluid pressure, pulse, respirations, blood pressure and motor activity indicate that codeine and pentobarbital sodium are effective and least harmful. Their use should be discontinued as soon as possible and their routine use is condemned. The administration of morphine should be avoided except when it becomes imperative for relief from pain.

Annals of Internal Medicine, Lancaster, Pa.

20:193-360 (Feb.) 1944

*Some Clinical Studies of Acute Hepatitis Occurring in Soldiers After Inoculation with Yellow Fever Vaccine, with Especial Consideration of Severe Attacks. R. H. Turner, J. R. Snavely, E. B. Grossman, R. N. Buchanan and S. O. Foster.—p. 193.
Management of Certain Aspects of Gas Poisoning, with Particular Reference to Shock and Pulmonary Complications. M. S. Segal and M. Aisner.—p. 219.
Mechanism and Treatment of Raynaud's Disease: Psychosomatic Disturbance. I. Mufson.—p. 228.
*Metabolic and Vitamin Studies in Chronic Ulcerative Colitis. Z. Bercovitz and R. C. Page.—p. 239.
Occupational Allergy of Respiratory Tract. V. J. Derbes and T. Winsor.—p. 255.
Optimal Dose of Mercurial Diuretics. W. Modell.—p. 265.
Infection Due to Salmonella Cholerae Suis. P. C. Eschweiler, J. G. Wahlin and Ann Snow.—p. 275.
*Studies on Infectious Mononucleosis. L. A. Julianelle, O. S. Bierbaum and C. V. Moore.—p. 281.
History Taking in Allergy: Outline For and a Comparison Of Results from 200 Histories and Skin Tests. O. Swineford Jr. and W. M. Weaver.—p. 293.

Acute Hepatitis After Inoculation with Yellow Fever Vaccine.—Turner and his associates state that the opportunities for clinical studies at Camp Polk, Louisiana, were unusual owing to the size of the epidemic and to the number of patients with severe hepatitis. Hepatitis at this camp was the result of only one lot of yellow fever vaccine, number 369, which provided a highly icterogenic vaccine. The number of patients with hepatitis was 4,083, and there were 14 deaths. Two requirements were necessary for inclusion of a case in this study: previous inoculation with yellow fever vaccine and evidence of hepatitis for which no other cause than vaccination could be found. The principal evidence of hepatitis was icterus. Hepatitis was diagnosed in the absence of icterus if patients gave a history of a recent onset of suggestive symptoms which included anorexia and dark urine, and if either enlargement of the liver or abnormal concentration of bile pigment in the blood or urine was found. The incubation period varied from nine to twenty-three weeks. Clinically the disease was indistinguishable from infectious hepatitis or catarrhal jaundice. The distinctive features were epidemiologic. Duration of disease, weight loss and highest icterus index were the criteria for classification. Eighty-one per cent were classed as mild, 17 per cent as moderately severe and 2 per cent as severe. The complications of hepatitis were dysfunction of the central nervous system, massive hemorrhages into the alimentary tract, ascites, sometimes with high protein concentration in the fluid, renal dysfunction as manifested by albuminuria and isosthenuria, skin rashes, gingivitis, and hemorrhages into skin and mucous membranes. Mental symptoms resembled some of those seen in acute alcoholism, hyperinsulinism and anoxia of the brain and indicated a grave prognosis. The number of days necessary for correction of prolonged prothrombin clotting after therapy with synthetic vitamin K was begun proved a valuable criterion for the degree of liver injury. The results of clinical and laboratory observations are compatible with the concept that there were two kinds of pathologic processes in the liver; one caused injury or death to hepatic cord cells and the other obstruction to flow of bile and less commonly of blood; the former was of brief duration and the latter frequently dominated the picture for most of the illness. The authors warn against using liver function tests for the diagnosis of surgically remediable biliary obstruction. Numerous observations indicated the great importance of rest in treatment and of the regular, frequent intake of food, especially carbohydrate. Quantitative estimations of appetite of a few patients indicated a preference for a diet of normal proportions.

Metabolic and Vitamin Studies in Chronic Ulcerative Colitis.—Patients studied by Bercovitz and Page suffered from chronic ulcerative colitis for periods of more than one year and had either been hospitalized or remained ambulatory. Before studies were instituted all patients were on a diet which consisted of high protein, high vitamin, low residue foods. This diet contained about 2,000 calories with the distribution: protein 85 Gm., carbohydrate 200 Gm., fat 85 Gm. Vitamin intake from natural sources was assured by including in the diet at least 6 ounces of fresh orange or grapefruit juice, which contains approximately 85 mg. of vitamin C, butter, puréed carrots and green vegetables for vitamin A and carotenoids. Some of the patients received increased amounts of carbohydrate in the form of dextrin amounting to 345 calories daily. The authors made numerous tests of dextrose tolerance, the basal metabolism, vitamin A and C blood levels, the effect of vitamin K and the like. Fifty standard oral one dose, two hour tolerance tests using 100 Gm. of dextrose were carried out on 37 patients. Normal curves were obtained in 11 tests (18.9 per cent) and abnormal curves in 47 tests (81.1 per cent). Tolerance tests were made with 1 Gm. of dextrose per kilogram of body weight. Of 23 patients tested in this manner, 7 showed normal and 16 abnormal curves. The dextrose metabolism as determined by basal metabolic rates and respiratory quotients proved essentially normal in patients with chronic ulcerative colitis. None of 15 intravenous dextrose clearance tests could be considered normal. Dextrin maintained significantly higher blood sugar levels for three hours than did dextrose. Of 33 patients 8 had low fasting plasma vitamin A levels. Of 31 patients 5 had low fasting plasma carotenoid levels. Of 33 patients 20 had low fasting vitamin C plasma levels. Of 36 patients 7 had both normal vitamin C plasma levels and normal capillary fragility tests when they were performed at the same time. Of 36 patients 24 had an abnormal capillary fragility test denoting diminished capillary resistance. Of 108 prothrombin clotting time determinations 80 were abnormal. Percutaneous vitamin K analogue caused a decrease in prothrombin clotting time in 4 patients and no change in 4 others. Vitamin K analogue orally caused a decrease in prothrombin clotting time in 2 patients and none in 2 others. Vitamin K analogue plus bile salts orally caused a decrease in prothrombin clotting time to normal in 5 patients. Of 5 patients 3 had a definite decrease in rectal bleeding on vitamin K therapy. The syndrome of chronic ulcerative colitis is not confined to an altered physiology of the colon but is also manifested by (1) altered absorption and utilization, (2) an impairment of the insulin mechanism, (3) generalized decreased capillary resistance and (4) altered blood coagulation.

Infectious Mononucleosis.—Julianelle and his collaborators recovered Listerella monocytogenes from the blood of a patient with clinical, hematologic and serologic manifestations of the disease. Experiments since reported led to the conclusion that, in spite of its capacity to induce in animals a state similar to the human infection, this organism is not the actual incitant. The result of an unpublished experiment in which two of the writers were inoculated intracutaneously with diluted suspensions of the organism was a further reason for eliminating Listerella as the cause. The authors report experiments conducted to demonstrate a specific virus in infectious mononucleosis. The materials for transmission were blood, gargle washings and excised lymph nodes, and the animals employed were mainly rabbits, with a certain number of monkeys (Macacus rhesus) and smaller animals. Although changes in the peripheral blood such as leukocytosis, lymphocytosis and monocytosis were observed with surprising regularity, the occurrence of abnormal white cells was negligible and their presence was only transient. The presence of heterophile antibody accompanying the inoculations was similarly irregular and of low frequency as well as titer. Attempts to transmit infectious mononucleosis to man were unsuccessful. Two subjects gargled with the throat washings of one patient, and two others permitted the intramuscular injection of a saline extract of cervical

lymph nodes removed from patients during the febrile period of the disease. One of the latter subjects also sprayed his nasopharynx with a portion of the saline extract. In no instance did hematologic changes result which indicated that transmission had occurred.

Annals of Otol., Rhin. and Laryngology, St. Louis

52:779-1042 (Dec.) 1943

*Histoplasmosis and Its Importance to Otorhinolaryngologists: Review with Report of New Case. M. Moore and L. H. Jorstad.—p. 779.
Role of Ciliary Action in Production of Pulmonary Atelectasis, Vacuum in Paranasal Sinuses and in Otitis Media. A. C. Hilding.—p. 816.
Injuries of Cervical Thoracic Duct. W. L. Simpson and D. G. Graham.—p. 834.
Hearing: Postwar Problem. J. C. Howard Jr.—p. 843.
Chronic Osteomylitis of Skull. H. Brunner.—p. 850.

Importance of Histoplasmosis to Otorhinolaryngologists.—According to Moore and Jorstad histoplasmosis, Darling's disease or cytomycosis is a fungous infection caused by an organism of the genus Histoplasma. The disease is characterized by fever, loss of weight or emaciation, anemia, leukopenia and splenohepatomegaly with invasion by reticuloendothelial histiocytes containing organisms. It may be cutaneous or systemic, localized or generalized, involving the skin, spleen, liver, lungs, lymph nodes, adrenals, kidneys, pleura, prostate, heart, brain, larynx, ear, nose, eye, bone, bone marrow, periosteal tissue, gastrointestinal tract and other organs. The disease may be acute or chronic, lasting from a few weeks to many years, but is invariably fatal. The authors report the clinical history of a man aged 67 who was complaining of a sore in the roof of his mouth, which had begun two months previously. A biopsy taken revealed histoplasmas. The ulcerated area was removed by cautery. Several months later additional tissue was removed, but the patient became steadily worse and died less than five months after the first operation. The most reliable diagnostic method is the cultivation of the causative organism from infected tissue or blood. The author was able to collect 22 cases of histoplasmosis with lesions of the ear, nose or throat, separately or together, with or without lesions in other organs of the body. The symptoms referable to the oral cavity were chiefly cough, sore throat with swelling, hoarseness, pain on swallowing and aphonia. Nasal symptoms included a mucopurulent rhinitis in 1 case and difficulty in breathing through the nares in most cases with nasal lesions. Exudate was the chief sign of ear involvement with the addition of impaired hearing and pain.

Archives of Otolaryngology, Chicago

39:109-200 (Feb.) 1944

*Method of Application of Drugs to Nasal Mucosa: Comparison of Nasal Drops, Sprays and Inhalers. D. B. Butler and A. C. Ivy.—p. 109.
*Proper and Improper Administration of Oily Nasal Sprays. B. L. Griesman.—p. 124.
Streptomyces (Actinomyces) Albus in Ear. S. G. Odom, E. J. Rodenberg and P. Schain.—p. 137.
Solitary Neurofibroma of Larynx. T. T. Smith.—p. 144.
Possible Value of Nontoxic Concentrations of Fluorine in Prevention of Deafness from Otosclerosis and Fibrosis: Its Possible Value in Prevention of Other Diseases. A. Lewy.—p. 152.
Plastic Surgery in Facial Paralysis, with Modifications in Technic. E. S. Lamont.—p. 155.
Correlation Between Vestibular Function and Hearing in Profoundly Deaf Child. Mary Frances Vastine.—p. 164.
Application of Hemilaryngectomy Technic in Laryngectomy. M. C. Myerson.—p. 172.
Sculpturally Molded Synthetic Implants in Plastic Surgery. A. M. Brown.—p. 179.

Application of Drugs to Nasal Mucosa.—Butler and Ivy show that the comparison of the use of nasal drops, nasal sprays and volatile inhalers requires an agent that can be used either in solution or in volatile form. They found that the synthetic amine desoxyephedrine meets these requirements, and they used it throughout their studies. The nasal inhaler was prepared by placing 0.25 cc. of *d,l*-desoxyephedrine on the cotton cartridge of an inhaler. The inhaler output was measured and the average inhalations of the subjects of these experiments were determined by attachment of an inhaler to a spirometer. It could be calculated that the dose of drug administered by four deep inhalations was approximately 3.19 mg. of the drug. The volume output of a large atomizer was 0.0806 cc. per spray. If a 1 per cent solution was used the drug output would be 0.806 mg. per spray or 3.22 mg. for four sprays. A medicine dropper of standard size yielded 0.042017 cc. per drop. Thus a 1 per cent solution gave 0.42017 mg. per drop or 3.36 mg. from eight drops. The study of changes in nasal obstruction in the present experiments was conducted with a method modified from that of Sternstein and Schur. The instrument used consists of an electric suction pump attached to a gas flow meter and an inclined draft gage. The nasal resistance of each subject was measured before any drug was administered and after administration of the drug. Nine young men with no demonstrable pathologic condition were used as subjects for these experiments. The effects of prolonged medication with nasal drops, nasal sprays and nasal inhalers of vasoconstrictor amines were studied on normal adult rabbits. The studies revealed that volatile inhalers and nasal sprays are similar in intensity and duration of effects produced, while nasal drops are far less effective as a method of medication. The effects on the nasal mucosa produced by repeated administration of inhalers and sprays are similar, and both produced far less pathologic change than that resulting from the use of nasal drops. It would seem that the selection of methods of medication in acute rhinologic conditions should be limited to nasal inhalers and sprays in most instances. When medication is desired in local areas of the nasal chamber, as at the ostium of a paranasal sinus, drops may be the method of choice. In conditions requiring prolonged and repeated medication nasal drops should be used with caution, and sprays or inhalers are suggested as the methods of choice.

Proper and Improper Administration of Oily Nasal Sprays.—Griesman made roentgenographic studies of the distribution of intranasally sprayed oils in therapeutic dosage and in massive overdosage. Iodized poppyseed oil was admixed to the oils to be tested in order to insure roentgenographic visibility. The aim was to determine to what degree the oil might traverse the nasopharynx, the mesopharynx and the hypopharynx or into the larynx, trachea and lungs. Tests were made on 31 persons ranging in age from 6½ to 66 years, who were free from infection of the upper respiratory tract. Particular attention was given to various positions of the head. The author found that healthy persons, irrespective of age, might aspirate oil (primarily when sprayed) even in therapeutic dosage if the oil is improperly administered. The presence or the absence of tonsils and adenoids and the use of a 1 per cent solution of an ephedrine salt prior to the administration of oil apparently do not increase the danger of oil aspiration. Scarring in the tonsillar beds and injury to the posterior pillars after tonsillectomy tend to increase the danger that oil will be aspirated if the oil is incorrectly administered. Oil is carried downward by the force of gravity. The decisive factor of safety or danger is the position in which the head is held during and after the administration of oil. The danger begins and increases with the size of the angle of the backward inclination of the head. There is no danger when the head is held straight or bent forward, even when massive doses are employed. The factor of safety increases with the size of the angle of the forward inclination of the head.

Journal of Immunology, Baltimore

48:1-86 (Jan.) 1944

Analogy Between Effect of Complement on Sensitized E. Typhosa and Effect of Tissue Individuality on Sensitized Virus. M. C. Morris.—p. 17.
Detection with Electron Microscope of Rod Shaped Particles in Stools of Normal and Poliomyelitic Individuals. J. L. Melnick.—p. 25.
Quantitative Studies of Sulfonamide Inhibitors. L. A. Rantz and W. M. M. Kirby.—p. 29.
Studies on Influenzal Infections in Chick Embryo. B. Sigurdsson.—p. 39.
Chemotherapy of Lymphocytic Choriomeningitis in Mice and Guinea Pigs. J. A. Toomey and W. S. Takacs.—p. 49.
Alum Toxoid Prepared from Diphtherial Toxin Produced on Gelatin-Hydrolysate Medium. W. Elias.—p. 57.
Studies on Listerella Monocytogenes. Mary Louise Robbins and A. M. Griffin.—p. 63.
Protection Against Spotted Fever by Specific Immune Serum Inoculated Intradermally at Site of Infection. L. Anigstein, M. N. Bader, G. Young and Dorothea Neubauer.—p. 69.
Antirenin. C. A. Johnson, G. E. Wakerlin and E. L. Smith.—p. 79.

Journal of Lab. and Clinical Medicine, St. Louis

29:121-230 (Feb.) 1944

*Persistence of Influenza Virus on Human Hand. Ernestine R. Parker and W. J. MacNeal.—p. 121.
Giant Orthochromatic Erythroblasts: Their Importance for Promegaloblast and Pronormoblast Problem. E. M. Schleicher.—p. 127.
Antibacterial Effects of Various Acridine Compounds. G. R. Goetchius and C. A. Lawrence.—p. 134.
General Considerations on Pathogenesis: Syphilitic Aortitis, Myocarditis, Hepatic Cirrhosis. R. Jaffé.—p. 139.
Pharmacologic Action of 2-Methylaminoheptane (EA-1). D. E. Jackson.—p. 150.
Simplification of Treatment of Diabetes. L. L. Pennock.—p. 168.
Circa 42, New Itch Remedy. J. F. Yeager and C. S. Wilson.—p. 177.
*Clinical Use of Oral Thermometers: Report of Study to Determine Time Required for Reliable Registration. N. De Nosaquo, I. Kerlan, Lila F. Knudsen and T. G. Klumpp.—p. 179.
Elliptocytosis, Report of 2 Cases. Mary K. Helz and Maud L. Menten.—p. 185.
Reaction Following Ingestion of Sodium Benzoate in Patient with Severe Liver Damage: Sever Substernal Pain, Shock, Increase in Icterus, Granulocytopenia and Eosinophilia in Colored Male Following Hippuric Acid Excretion Test. R. E. Kinsey and D. O. Wright.—p. 188.

Persistence of Influenza Virus on Human Hand.—In their first two experiments Parker and her associates made virus suspensions from the lungs of influenza mice. These proved to be of a rather low potency and to withstand drying poorly. Experiment 3, in which allantoic virus was used, gave a strikingly different result. Here the virus evidently retained a high potency after being dry on the hand for ten minutes and dry on a glass surface for two hundred minutes. In experiment 4 the allantoic virus remained active forty minutes after it had been dried on the hand. In experiment 5 the hand washed in the ordinary way allowed the virus to retain its activity forty minutes after being dried on the skin. When soapy water was allowed to dry on the hands the virus subsequently dried on the same areas promptly lost its potency. In other experiments the inactivating effect of soapy skin was compared with that of soap-free skin. These experiments are at variance with those of Krueger and his associates, who observed rapid loss of potency in virus deposited on the hand and therefore concluded that transmission through this agency is not apt to be an important hazard. Parker and her associates are inclined to the view that soiled hands may reasonably be regarded as important for the spread of influenza, especially the soiled hands of those concerned with the preparation and serving of food. Fortunately the virus of influenza appears to be readily inactivated by ordinary soaps.

Time Required for Reliable Registration by Oral Thermometers.—De Nosaquo and his collaborators sent a questionnaire to 100 training schools for nurses throughout the country. This questionnaire asked (1) What is the minimum time interval between insertion and reading of clinical thermometers? and (2) Have the above time intervals been selected on the basis of the manufacturers' statements, your own clinical tests, common knowledge or some other basis? Of the 69 replies to the first question 27 answered that the time of insertion of the thermometer in recording oral temperature was less than three minutes, 37 stated three minutes and 5 recommended longer than three minutes. In reply to the second question 13 stated that these time intervals were based partially or wholly on manufacturers' statements, 30 on clinical test, 26 on common knowledge, 16 on textbook statements and 10 on experience. The authors decided to determine the time required for oral clinical thermometers to reach equilibrium in the mouths of persons. Approximately 1,000 clinical thermometers were collected by the Food and Drug Administration throughout the United States. Of these thermometers about 800 were found to meet the requirements and tests specified for clinical thermometers in the Bureau of Standards. By random sampling of these 800 thermometers, 20 instruments were selected for testing. The authors found that the character of the rise of the mercury column in an oral thermometer under clinical conditions is different from that under laboratory conditions. Thermometers marked with specific time designations "1 minute," "½ minute" and "60 seconds" were found to require about the same length of time for the instrument to reach equilibrium as thermometers with no time designations. Three minutes should be the minimum time interval allotted for an oral thermometer to reach equilibrium under ordinary conditions of use.

Medical Annals of District of Columbia, Washington

13:45-88 (Feb.) 1944

Plastic Surgery in Combat and Civilian Casualties. R. H. Ivy.—p. 45.
Continuous Sodium Pentothal in Cases Associated with Shock. C. E. Fierst.—p. 50.
Method of Treatment of Meningococcal Meningitis with Sulfadiazine and Sulfamerazine (Sulfamethyldiazine) and the Results Obtained in 140 Cases. M. H. Lepper and Edith Dumoff Stanley.—p. 54.
*Frontiers of Multiple Sclerosis: II. Treatment of Multiple Sclerosis, with Special Reference to Fever Therapy, Prolonged Rest and Climatotherapy. W. Freeman.—p. 58.

Multiple Sclerosis: Prolonged Rest and Climatotherapy.—Freeman points out that the fact that multiple sclerosis is characterized by remissions and relapses of great variability in degree and duration renders difficult the evaluation of any treatment. The author's experience with fever therapy has been unfavorable in all of the 11 cases in which he tried it. On the basis of a case history he shows that untoward happenings may bring on relapses in multiple sclerosis. Neglected head colds often bring on relapses. A patient with multiple sclerosis must be constantly on the alert to give up at the first sign of a cold in the head. It is much preferable for him to spend a day or two in bed, even if a cold does not develop, rather than to run the risk of allowing a cold to run on to more serious proportions. Should a cold gain headway, the rest in bed should be prolonged for several days in the hope of averting further damage to the body defenses by the development of purulent rhinopharyngitis and sinusitis. Prolonged bed rest is also important in multiple sclerosis. Favorable results have been observed in cases in which prolonged rest was applied at the beginning of the illness. Climate also is a factor in the maintenance of optimal health in multiple sclerosis. This is not a question of mere warmth, however, nor is it altogether a question of more sunlight. Probably the less strenuous tempo of existence in the southern countries acts favorably. Long term study of patients with multiple sclerosis indicates that prolonged rest is the one most important factor in the early treatment of the condition, and that a warm climate with freedom from upper respiratory infections is the best insurance against further crippling recrudescences of the disease.

New Jersey Medical Society Journal, Trenton

41:1-34 (Jan.) 1944

Twenty-Five Years of Spinal Anesthesia: With Report of 1,020 Consecutive Cases. M. Joseph.—p. 6.
Ménière's Syndrome, Migraine and Certain Related Conditions. M. Atkinson.—p. 11.
Mapharsen, an Unusual Local Reaction. E. M. Satulsky.—p. 22.

41:35-74 (Feb.) 1944

Breast Milk for Emergency Feeding. W. Ripley.—p. 43.
Statistical Record of Experience with Breast Milk Bank. Ann L. Clark.—p. 45.
Dr. George W. Campbell, 1748-1798. W. K. Campbell.—p. 47.

Psychosomatic Medicine, Baltimore

6:1-116 (Jan.) 1944

Psychosomatic Medicine: Historical Perspective. G. Zilboorg.—p. 3.
Dominance, Neurosis and Aggression. J. H. Masserman and P. W. Siever.—p. 7.
Tuberculosis and Personality Conflicts. J. Hartz.—p. 17.
Parallelism in Changes of Sensory Function and Electroencephalogram in Anoxia and Effect of Hypercapnia Under These Conditions. E. Gellhorn and H. Hailman.—p. 23.
Electroencephalographic Studies in Asthma with Some Personality Correlates. S. Rubin and L. Moses.—p. 31.
Effects of Injury to Cerebral Cortex on Sexually Receptive Behavior of Female Rat. F. A. Beach.—p. 40.

Wisconsin Medical Journal, Madison

43:1-196 (Jan.) 1944

Part of Physician in Rationing. T. E. Fairchild.—p. 175.

43:197-280 (Feb.) 1944

Fate of Practice of Medicine After War. A. M. Schwitalla.—p. 213.
Diagnosis of Early Myocardial Failure. C. C. Maher.—p. 219.
Diagnosis and Treatment of Rheumatic Fever. P. S. Rhoads.—p. 222.
Primary Atypical Pneumonia (Virus Pneumonia). R. C. Schmitz.—p. 228.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1:69-104 (Jan. 15) 1944

Clinical Features and Treatment of Malaria in British Troops in West Africa. S. B. Hughes and R. R. Bomford.—p. 69.
*Despeciated Bovine Serum: Substitute for Human Plasma. F. R. Edwards.—p. 73.
*Treatment of Anemia in School Children with Iron and Ascorbic Acid. L. S. P. Davidson and G. M. M. Donaldson.—p. 76.
*Influence of Supplements of Vitamins A, B_1, B_2, C and D on Growth, Health and Physical Fitness. E. R. Bransby, J. W. Hunter, H. E. MaGee, E. H. M. Milligan and T. S. Rodgers.—p. 77.
Umbilical Hernia in Children, with Special Reference to Injection Treatment. M. J. Bennett-Jones.—p. 78.

Despeciated Bovine Serum: Substitute for Human Plasma.—Edwards states that bovine serum can be made safe for man by destroying the antibodies by heating to 72 C., while rendering the proteins uncoagulable with the addition of 0.2 per cent of formaldehyde and ammonia. Clinical trial in 26 cases showed that it can be administered rapidly and in large amounts to man with safety.

Iron and Ascorbic Acid for Anemia in School Children.—According to Davidson and Donaldson, investigations into the hemoglobin levels of large numbers of persons in different areas of Great Britain have demonstrated the frequency with which anemia occurs in infants, school children and women both pregnant and nonpregnant. The anemia is almost universally of the hypochromic type, which responds excellently to iron therapy. Administration of iron in doses of approximately one third of that usually prescribed for curative treatment can significantly improve the hemoglobin levels of school children. This suggests that the hypochromic anemia of these children is mainly conditioned by an insufficiency of iron in the diet. A supplement of 25 mg. of ascorbic acid daily had no effect in raising the hemoglobin levels.

Influence of Vitamins on Growth and Fitness.—Bransby and his associates give a summary of a vitamin feeding test carried out between November 1941 and August 1942 on 1,400 school children and adults. The aim was to ascertain whether a supplement of synthetic vitamins to the ordinary diet would improve growth, health and physical efficiency. Each capsule contained 4,000 international units of vitamin A, 333 international units of thiamine, 2 mg. of riboflavin, 1,000 international units of ascorbic acid, 20 mg. of nicotinamide and 600 international units of vitamin D. The school children were examined before, during and after the period of feeding. They were divided into two equal groups; one group received a vitamin capsule every school day and the other a capsule containing a similar quality of arachis oil, which is practically devoid of vitamins. The factory tests were conducted at zinc smelting works, where the labor is extremely strenuous and exhausting. In the children it was found that the vitamins had no statistically significant effect on the rate of growth, nutritional status, muscular strength, condition of the teeth and gums or absence from school on account of illness. In the factory tests on 214 adult men the results showed that the vitamin capsules had no significant effects on weight, hemoglobin, blood pressure, absence from illness or output of material.

Praxis, Basel

32:363-382 (May 20) 1943

*Boeck's Disease. W. Berblinger.—p. 363.
*Symptomatology, Causes and Therapy of Spontaneous Pneumothorax. W. Küchler.—p. 365.
Lungs and Cancer of Lung. H. Tecoz.—p. 368.

Boeck's Disease.—Berblinger states that Boeck's sarcoid, or miliary lupoid, had been designated by Besnier as lupus pernio. The cutaneous lesions, which at first are light red, circumscribed or diffuse, later become bluish red and hard infiltrations. They may heal, leaving no traces. Microscopic examination discloses at first collections of lymphocytes around the vessels in the stratum papillare. Later circumscribed foci of epitheloid cells develop. Proliferation of epitheloid cells with a few giant cells and subsequent hyaline sclerotization but without caseation are the essential features of the pathologic process. The same tissue reactions are found also in the mucous membranes, lymph nodes, spleen, liver, bone marrow, lungs, epididymides, kidneys, central nervous system, conjunctiva, iris, hypophysis and lymph nodes. This shows that the process is generalized, a fact that was emphasized by Schaumann, who designated the condition as benign lymphogranulomatosis. It is now known that Boeck's miliary lupoid, Heerfordt's uveoparotitis, the multiple cysticosteitis of Jüngling and certain forms of generalized swelling of lymph nodes, of splenomegaly, of iridocyclitis and of pulmonary changes with predominant involvement of the hilus are merely different localizations of a nosologic unit. The author gives particular attention to the pulmonary changes which predominated in a case which he observed post mortem. Pulmonary involvement usually begins with enlargement of the lymph nodes in the hilus region. This is followed either by a miliary dissemination or by the formation of larger foci, which subsequently may disappear. Increasing sclerotization of foci in the bronchial mucosa may lead to dyspnea. Stasis in the pulmonary circulation is possible if vessels become throttled by extensive sclerotization of pulmonary tissue. In general, pulmonary symptoms are slight. The formation of pleural foci may give rise to piercing pains in the chest. The author succeeded in isolating tubercle bacilli of the human type from guinea pigs which he had inoculated with tissue from the aforementioned patient. He reviews observations that have been cited for and against a tuberculous etiology of Besnier-Boeck-Schaumann's disease. He believes that it is a form of tuberculosis even though it may be regarded as atypical.

Spontaneous Pneumothorax.—Küchler states that within a comparatively short time spontaneous pneumothorax may produce threatening symptoms such as piercing thoracic pain, angor, severe dyspnea, cough, pain in the epigastric region and cyanosis. In other cases pneumothorax is hardly noticeable; the patient is at the most somewhat dyspneic. Sometimes spontaneous pneumothorax is discovered accidentally in the course of a roentgenoscopy, and in other cases it may remain unrecognized. Diagnosis can be based on the loud percussion sound, greatly decreased or completely lacking respiratory sounds, enlargement of the involved half of the chest, smoothing over of the intercostal spaces, differences in form and movement of the two halves of the thorax and lessening of the voice fremitus over the pneumothorax. Percussion often reveals shifting of the heart and mediastinum. The percussion sound has a decidedly tympanitic overtone as long as the air in the pneumothorax is not under great pressure. As the pressure increases, the percussion sound becomes more like that over a normal lung. Respiratory and heart sounds are usually weak. Amphoric respiratory sounds are often typical of pneumothorax, but they occur also in the presence of large cavities. Metallic sounds are likewise frequent in pneumothorax. Roentgenoscopy gives the most conclusive evidence of pneumothorax. If severe dyspnea and cyanosis exist, relief must be provided at once by insertion of a hollow needle anteriorly into the first or second intercostal space. If dyspnea recurs soon, the needle must be left in situ. A valve that permits escape but prevents external intake of air can be improvised from a rubber finger-stall. The patient should be hospitalized as soon as it is possible to transport him. If dyspnea continues to return after repeated withdrawal of air, it is best to introduce a permanent cannula with valve. Dyspnea as well as cough must be suppressed by medication with a combination of morphine and atropine. The patient should be kept in the sitting posture, and roentgenologic observation should be continued. It has been advised that the pneumothorax be continued for from six to nine months after closure of the pleuropulmonary fistula. After the pneumothorax has been absorbed, the patient should be advised to avoid sudden movement and the lifting of heavy loads. In case of spontaneous pneumothorax on a tuberculous basis, a prolonged pneumothorax treatment becomes necessary so that the subpleural tuberculous changes may have a chance to heal. Emphysema blisters may be treated by touching them with the cautery under thoracoscopic guidance. Traumatic pneumothorax in the war wounded demands that the wound be closed in order to avoid further inrush of air.

Book Notices

Backache and Sciatic Neuritis: Back Injuries—Deformities—Diseases—Disabilities, with Notes on the Pelvis, Neck, and Brachial Neuritis. By Philip Lewin, M.D., F.A.C.S., Associate Professor of Bone and Joint Surgery, Northwestern University Medical School, Chicago. Cloth. Price, $10. Pp. 745, with 235 illustrations. Philadelphia: Lea & Febiger, 1943.

Increased attention to conditions affecting the spine has in recent years brought to light several new developments of great significance. Protrusion of an intervertebral disk has perhaps been given significance far above its incidence in contrast to the innumerable other causes of pain in the back. Dr. Lewin's book comes with dedications to eleven well known orthopedic surgeons of the past and present, a preface and two forewords, certainly thus being well introduced. However, once these preliminaries are past, it proceeds to a practical consideration of the embryology and anatomy of the spine, well outlined and illustrated, a consideration of symptomatology and diagnosis, including the use of the roentgen ray and the laboratory. Then follow chapters on basic principles, manipulation, operative treatment, body posture and special considerations of industrial and military conditions affecting the spine. The book is no doubt the most complete thus far developed in its field. Its illustrations are numerous, the considerations intensely practical. One third of the book is devoted to such correlated conditions as sciatic neuritis, brachial neuritis and torticollis. A supplementary section provides an appendix to which a considerable number of authorities have contributed in the form of brief abstracts. Appended finally is a collection of miscellaneous and unclassified material, including all sorts of quotations, aphorisms, new instruments and what-not, which in a better organized book would have been properly inserted into the general text. Altogether again it may be said that this is the most practical and useful book on backache and sciatic neuritis that has come to the attention of the reviewer but that a little more care in the organization and development of the volume would have overcome its minor faults.

The Curriculum in Health and Physical Education. By Leslie W. Irwin, Ph.D., Director of Health and Physical Education, The Laboratory Schools, The University of Chicago. Fabrikoid. Price, $3.50. Pp. 391. St. Louis: C. V. Mosby Company, 1944.

This book is a description of a curriculum in health and physical education, which, as the author indicates in his preface, "is meant to serve the purpose of presenting in a logical way the important problems in curriculum construction and conduct of activities. The book presents a sound approach to the curriculum in health, physical education, recreation and safety, as it has been conceived and developed through experience in the democratic plan of education in the schools and colleges of America It is based on the desirable and successful activities and practices which have evolved through experience. The text is especially planned to clarify the thinking and give a basis for planning and establishing the best possible programs on the parts of teachers and school administrators. Also it is designed as a text in curriculum for use with both undergraduate and graduate students in professional courses in health and physical education." The book may fairly be said to have justified the purposes of its author. It should be useful to teachers, health supervisors, school administrators and board members and to physicians serving on medical advisory committees to local school boards or as members of boards of education.

Health Progress Through Team Work and Citizen Participation. Twenty-Sixth Annual Report of the Public Health Federation and Its Councils for the Year December 1942 to December 1943. Paper. Pp. 45, with illustrations. Cincinnati: Public Health Federation, [n. d.].

This pamphlet, which is presumably available free to public health workers while it lasts, is an example of how community cooperation, often praised in theory, can really work in practice. It is the annual report of the Public Health Federation of Cincinnati and Hamilton County. In this federation all public and private health agencies in Hamilton County are represented by two delegates each to the Public Health Federation, which is in turn a division of the Community Chest. The Public Health Federation meets annually to receive reports, discuss work and elect officers. It is a coordinating committee consisting of the officers, members at large, chairmen of the Constituent Councils, health commissioners (city and county) and official representatives of the medical, dental, nursing and pharmacy professions. Included in the federation are the Anti-Tuberculosis League, the Social Hygiene Society and the Better Housing League of Cincinnati. The Constituent Councils include one each on nutrition, mouth hygiene, mental hygiene, heart, health education and cancer. Other activities include a division on diabetes, one on clinics and one on child hygiene; the latter includes a day nursery section. The stated purpose of the federation is to coordinate activities of public and private agencies, prevent duplication and promote sound community health planning, research and education. Experience in Cincinnati over a considerable period of years has shown that a large city, complex in composition of population and in social and political organization, can coordinate and improve its public health program to the satisfaction of all interested groups and the benefit of the people in the community. This report should be interesting reading for any one who has any relationship to public health organization in American communities.

Organizing to Help the Handicapped: A Brief Guide for Voluntary Associations for the Crippled. By T. Arthur Turner. Cloth. Price, $1. Paper. Price, 50 cents. Pp. 165. Elyria, Ohio: National Society for Crippled Children, Inc., 1944.

This excellent little handbook is more than its title implies. By making a few simple changes in the text, it could well have been entitled "Organizing for Voluntary Health Work." It is as good a manual for the executive secretary of a voluntary health agency as this reviewer has seen. In its fifteen chapters and introduction it deals with the care of the handicapped as a social principle, describes state programs for crippled children and for physical and vocational rehabilitation, discusses public programs for the education of handicapped children, describes relationship of public and private agencies for the handicapped and outlines the general service program of the voluntary group. It then proceeds to chapters dealing with four special projects: summer camps, service to sheltered and home bound, employment of the handicapped and community health and the prevention of handicap. Structure and administration of associations for the physically handicapped constitute the subject of one chapter, and there is one devoted to publicity and one to promoting legislation. The concluding chapter deals with the creative spirit in work for the physically handicapped.

The American Woman: The Feminine Side of a Masculine Civilization. By Ernest R. Groves. Second edition. Cloth. Price, $3.50. Pp. 465. New York: Emerson Books, Inc., 1944.

This revised edition is a worthy successor to the first. It is an exceptionally complete, objective and scientific and yet is an eminently readable presentation of the place of women in modern life. He starts by building a cultural background for women in general, beginning with woman in the Bible and her place under Christianity. From there he proceeds to deal in order with the colonial woman and the frontier woman. Between the Revolution and the Civil War he deals separately with the women of the North, those of the South and those of the Middle West and the Great Plains. During and after the Civil War he considers women as one group. After these chapters based on time periods follow considerations of woman's political and social advance, her industrial and educational progress, her place in the twentieth century, her changing status and her near equality with men. The book is richly documented and adequately indexed. It is a real contribution to the literature of American sociology and is of interest to the physician because of the repercussions of social change on medical practice and on the individuals whom the doctor meets in his practice.

Sea Food Cookery: A Complete Handbook for Every Kind of Fish Cooking, with Menus and Suggestions for Serving. By Lily Haxworth Wallace. Cloth. Price, $2. Pp. 180. New York: M. Barrows & Company, Inc., 1944.

The increasing use of sea foods makes especially welcome a collection of recipes likely to intensify the pleasure derived from shellfish, salt water fish and the other inhabitants of the deep. There is even a chapter on what to do with fish leftovers. Here the author might well have had a little more to say about proper refrigeration.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

HOSPITALIZATION AND EVACUATION OF A WOUNDED SOLDIER

To the Editor:—**Will you please give me the complete hospital arrangement in this present war for the care of injured soldiers—that is, from the front line trenches or front lines back to where they are either returned to duty or are evacuated home. This subject comes up frequently and I am often asked questions concerning it, especially by parents who have boys in the service.**

M.D., Indiana.

ANSWER.—A soldier who is wounded on the front line is treated in the manner here outlined. At any time in the chain he may be returned to duty, should his condition warrant.

1. When wounded, he is given first aid and tagged by an enlisted man of the Medical Department known as a "company aid man."

2. He is evacuated to a battalion aid station by litter and given treatment by his battalion surgeon.

3. From the aid station he is sent by litter bearer, jeep or ambulance to a clearing station (formerly a field hospital). He may go from the aid station by litter to a collecting station and then by motor transportation to the clearing station.

4. Army motor transport then takes him to an evacuation hospital (a 400 or 750 bed unit well behind the lines).

5. Movement from the evacuation hospital may be by train, air or motor convoy to a general hospital (a 1,000 bed unit or larger).

6. He is held at the general hospital for definitive treatment, unless he will not recover in 60, 90 or 120 days or longer, depending on the policy in force in the particular theater of operations. If his hospitalization will last over a longer period of time,

7. He is sent by plane or ship to the home territory, where he is sent to a named general hospital. These hospitals are scattered all over the United States and certain ones have been designated to treat special types of cases, such as amputations, chest surgery, neurosurgery and plastic surgery.

"ALTERATIVES" AND IODIDES

To the Editor:—**Is it now maintained that potassium iodide still has any effect as an alterative? What was the older concept about an alterative?**

Amos T. Harrington, M.D., West Hartford, Conn.

ANSWER.—One of the most illuminating definitions of "alterative" is given in Dunglison's Dictionary of Medical Science, 1857: "An agent considered to be capable of producing a salutary change in a disease, but without exciting any sensible evacuation. As medicine improves, this uncertain class of remedies becomes, of necessity, diminished in number." In other words, the term "alterative" is a word screen for ignorance. Dunglison's prediction has come true: as information increases and concepts clear, such vaguely defined terms fall into disrepute, and the word "alterative" is now rarely used by modern writers. Not everything is known about the action of iodides, but they are no longer a complete mystery.

The older conception of "alterative" is further illustrated by the following excerpt from Quain's Dictionary of Medicine, 1883: "Medicines which gradually restore the nutrition of the body to a healthy condition, without producing evacuations, or immediately exerting any very evident action upon the nervous system. . . . Digestion and excretion may be improved by tonics, purgatives, and diuretics; but alteratives seem to exert their action upon assimilation and tissue change. . . . Mercurials in purgative doses, taraxacum, nitric and nitro-hydrochloric acids probably act by modifying the digestion of the food in the upper part of the small intestine or by affecting the changes which it undergoes in the liver after absorption. Potash has probably an action on the muscles. Antimony, arsenic and phosphorus especially affect the nervous and cutaneous systems. Mercury has a peculiar power of breaking up newly formed fibrinous and particularly syphilitic deposits. Iodine, iodides and probably chlorides act upon the lymphatic system and promote absorption."

OBSCURE FEBRILE ILLNESS WITH ABDOMINAL PAIN

To the Editor:—**A white boy aged 16 years, a farmer's son both of whose parents, two brothers and two sisters are living and well, was always very nervous and suffered from chronic constipation. He is a sophomore in high school. His past history includes a difficult delivery with asphyxia for a long time, and the usual childhood diseases. He took sick with pain in the epigastrium and around the umbilicus on Dec. 11, 1943. The pain was moderately severe, not continuous and not radiating. Associated symptoms were anorexia and constipation. He did not improve under medical treatment, so he was taken to the hospital Dec. 24, 1943. On admission the pain was about the same as previously. He seemed to be in acute pain and dehydrated. The temperature was 100 F., pulse rate 120, respiratory rate 24 and blood pressure 120/80. The head, neck, chest, rectum and extremities were normal. The abdomen was not distended, although there was slight rigidity and tenderness all over. No masses were palpable; the liver, spleen and kidneys were not palpable. The white blood cell count was 18,000, and the differential count was within normal limits. There was a slight trace of albumin in the urine, which was otherwise normal. The reaction for tuberculosis was 2 plus. X-ray examination of the heart, lungs and colon revealed no abnormalities. The pain continued more or less the same and seemed to be more on the right side. The temperature fluctuated from 99.5 to 100.5 F. by mouth; the pulse rate varied from 100 to 120, and the respiratory rate from 20 to 24. A stiffness developed in both elbows and arms. The bowels were regulated by magnesia magma and liquid petrolatum. As he continued to complain of abdominal pain, an exploratory laparotomy was performed Jan. 16, 1944. The omentum was adherent to the appendix; the appendix and adherent omentum were removed. The contents of the abdominal cavity were carefully inspected and found to be normal. He made a perfect recovery. After the operation the temperature was never more than 98.6 F., respiratory rate 18 and pulse rate 70 to 80. Returning home January 30 he soon started to complain of pain in his right toe and calf of the right leg. The temperature, pulse and respiration gradually returned to previous levels. Later the stiffness in his arms returned. Still later, around February 14, the abdominal pain returned. Now, early in the morning, after awakening, he is disorientated and confused, but this leaves him after about thirty minutes. He refuses most of the time to eat because of his abdominal pain. He is restless and nervous and is gradually getting weaker. He is unable to get out of bed. Physical examination is completely negative. Laboratory findings show 1 plus albumin in the urine and microscopic urea crystals but otherwise is normal. At present he is on small doses of phenobarbital, ¼ grain (0.016 Gm.) every four hours, a multivitamin mixture three times a day, and acetylsalicylic acid 10 grains (0.65 Gm.) as necessary. The acetylsalicylic acid seems to control the pain better than codeine. Any suggestions as to further treatment and diagnosis would be appreciated.**

M.D., Illinois.

ANSWER.—In the light of the available evidence a definite diagnosis, or even a presumptive one, is not possible. It is reasonable to presume that the appendix was not the cause of the patient's symptoms and signs in spite of the temporary improvement following its removal, which procedure was justifiable under the circumstances. The apparently negative complete exploration of the abdominal organs at the time of the operation should exclude tumefactive causes which may give rise to abdominal pain, low grade fever and rather rapid deterioration in the general health of the patient. The negative exploration and negative x-ray examination of the lungs also greatly minimize the importance of the positive tuberculin reaction. The symptoms directed to the extremities and the brief disturbances of the sensorium are probably a combination of toxemia and general weakness rather than the result of some actual disease of the central nervous system. The nervous constitution of the patient and the chronic constipation might in a measure explain the abdominal pains on the basis of viscerospasm as well as the anorexia and even the low grade fever. However, other possibilities should be excluded, such as rheumatic fever in atypical form, undulant fever, localized abscess and terminal ileitis. Logical further examinations would consist of a blood culture, several sedimentation rates, morphologic examination of a blood smear and agglutination tests for Brucella organisms, typhoid and paratyphoid and Pasteurella tularensis.

STERILIZING TINCTURE OF GREEN SOAP

To the Editor:—**It is the practice at this hospital to sterilize by autoclaving all tincture of green soap which is used in the preparation of patients for operation. This is a troublesome procedure, since the soap invariably becomes spilled or bubbles out into the autoclave. Will you please advise if the sterilization of tincture of green soap for this purpose is necessary?**

W. T. Freeman, M.D., Asheville, N. C.

ANSWER.—Spores may survive in tincture of green soap despite its alcoholic content. Spores may survive in alcohol for days. It is only from the standpoint of destroying spores that autoclaving of tincture of green soap is necessary. The use of a bottle with a screw top will prevent overflowing of the soap from the container.

Many men have substituted plain white soap for tincture of green soap both for washing their hands before operation and for preparation of the field of operation. Clinical observation of many patients over a considerable period of years indicates that as a result of this substitution better results are being obtained as far as healing by primary union is concerned and that plain white soap is less irritating both to the hands of the surgeon and to the skin of the patient. In clinics where this procedure is carried out the attempt to sterilize the white soap that is used is not made.

POSSIBLE TOXICITY OF ISOPROPYLBENZENE

To the Editor:—Do you have any data concerning possible industrial hazards of cumene (isopropylbenzene)? Recently a middle aged man who had been well developed epileptiform seizures and impotence following exposure to this substance for somewhat more than six months. I am particularly interested to learn whether this relationship is a matter of coincidence or whether there may be a cause and effect relationship.

John B. Doyle, M.D., Los Angeles.

ANSWER.—Compared with the toxicity of benzene, that of isopropylbenzene (cumene) apparently is low, but little detailed information about the latter is available. Long ago Rambousek noted that an atmosphere containing up to 0.07 cc. of isopropylbenzene per liter of air did not cause injury after one hour of exposure. More recently Lazarew has reported experimental work with mice and notes that a concentration of 4,080 parts per million caused prostration and 5,100 parts per million loss of reflexes. Lazarew holds that this substance, being a split side chain derivative, is on that account less toxic than comparable straight chain derivatives. The boiling point of isopropylbenzene (153.4 C.) is approximately double that of the more volatile benzene (79.6 C.), which fact diminishes the prospects of damage from vapors of isopropylbenzene. At this time there is no intimation that isopropylbenzene may contain benzene as an impurity. About the only diagnostic lead in the laboratory field is the inereased sulfuric acid derivatives in the urine. Another substance sometimes called cumene or, more properly, pseudocumene, is trimethylbenzene, but its toxicity is only about one-half that of cumene. While a potential toxicity for cumene is possible, there is no warrant to associate a convulsive state with impotence in one worker with this substance. If several workers were involved or if this one worker exhibited a wider spread of manifestations, greater import might be attached to the cumene as the cause. Convulsive states which are not associated with work are common, and impotence is also widespread.

References:

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Nencki, M., and Giacosa, P.: *Ztschr. f. physiol. Chem.* **4**: 325, 1880.
Rambousek: Gewerbliche Vergiftungen, Leipzig, 1911, p. 261.

VITAMINS AND CANCER

To the Editor:—Several months ago I came across a reference in a lay magazine to vitamin B_1 and to biotin, which led me to believe that the author implied that these substances may be dangerous to take because they seem to encourage the growth of cancer. Is there any truth in this idea? What about the millions of people now taking these vitamins; are they in danger? S. Edward Fretz, M.D., St. Petersburg, Fla.

ANSWER.—Addition or subtraction of certain dietary factors are instrumental in increasing or decreasing the incidence of neoplastic growths experimentally produced. It has been shown that biotin deficiency protects against the development of liver tumor induced by the yellow dye dimethylaminoazobenzene in rats. However, vitamins are not themselves carcinogenic factors, and there is no clinical or experimental basis to indicate addition or subtraction of any normal dietary factor as a prophylactic means against the development of spontaneous human tumors.

PENICILLIN

To the Editor:—I remember having read in older textbooks about the use of a powder made from Penicillium glaucum for insufflation into the pharynx in cases of diphtheria. I wonder if this obsolete therapy could have been the forerunner of penicillin.

Alfred D. Beutler, M.D., Milwaukee.

ANSWER.—There is no evidence from the early papers on penicillin to suggest that the obsolete therapy of insufflating powder made from Penicillium glaucum into the pharynx in the treatment of diphtheria had anything to do with the discovery or investigation of penicillin.

VACCINATION IN PRESENCE OF ICHTHYOSIS

To the Editor:—A girl aged 7 years has a mild generalized ichthyosis. Her mother wishes her to be vaccinated against smallpox, but several previous physicians have refused to vaccinate her because of her ichthyosis. Would you consider ichthyosis of a rather mild degree a contraindication to the usual form of vaccination? 1st Lieutenant, M. C., A. U. S.

ANSWER.—The presence of breaks in the skin, fissures, erosions or ulcers due to accident, burns or surgery or those caused by such diseases as eczema or impetigo serves as a contraindication to vaccination. The occurrence of multiple vaccinal lesions is seen rarely in patients with normal skin but quite regularly in those with such injuries. Owing to the multiplicity of lesions, the general reaction is excessive and not seldom fatal. Vaccinia is a general disease, not a local one, and, while external contamination is responsible for many of these cases, there are some in which no external infection with the vaccine virus occurred but, in spite of this, involvement of the distant breaks in continuity. An interesting example of this blood borne infection is related by Templeton (H. J.: Postvaccinal Cutaneous Eruption, THE JOURNAL, Dec. 22, 1923, p. 2115), who fulgurated several moles on the face of a young woman whose mother was a nurse. Only after the fulguration was completed did he learn that two days previously the mother of the patient had performed a first vaccination on her daughter. Two days after the moles had been treated, on the fourth day of vaccination, papules developed at the site of vaccination and at each of the fulgurated spots. They all passed through the regular stages of vaccinia and on healing left pocks.

Although no reference to ichthyosis in this connection has been found in the literature, the possible relation is evident. Ichthyotic skin is much more susceptible than normal skin to external irritation, resulting in frequent attacks of dermatitis, contraindicating vaccination for a time, until the skin surface can be healed. Only at such times is vaccination dangerous. The danger was discussed by F. A. Ellis in an article entitled Eczema Vaccinatum (THE JOURNAL, May 25, 1935, p. 1891).

ROENTGEN EXAMINATION OF GALLBLADDER

To the Editor:—In taking roentgenograms of the gallbladder by the dye method, it formerly was customary to insist that the patient remain as quiet as possible during the morning and forenoon of the day they are taken; that is, following intake of the dye at the evening meal of the day before. Because a great many of my patients live from 10 to 20 miles in the country, it has seemed necessary to insist that those who are having x-ray studies of the gallbladder must spend the preceding night close to my office where the x-ray films are made. This is a hardship for some patients, and I am wondering if there may have been some recent change of attitude on this particular point. Certainly patients living at a distance would appreciate it if it was not necessary to spend the night preceding the taking of the films in town. What is considered the best practice at present?

Ray S. Wycoff, M.D., Lexington, Neb.

ANSWER.—It does not seem necessary to insist that patients arise in the morning and proceed directly for x-ray study of the gallbladder. A trip of thirty to sixty minutes does not usually modify the results, especially when the most modern dye is used.

TYPHOID AND THE SULFONAMIDES

To the Editor:—Is the internal administration of sulfaguanidine of any therapeutic value in the treatment of typhoid?

C. S. Fickel, M.D., Carlisle, Pa.

ANSWER.—There is no convincing evidence that any of the sulfonamides, including sulfaguanidine, are of specific therapeutic value for patients with typhoid. This statement also applies to the treatment of chronic carriers of the typhoid bacillus.

BLEEDING FOLLOWING APPLICATION OF SULFONAMIDES TO OPEN WOUNDS

To the Editor:—I should like to add something to the answer to the question entitled "Bleeding Following Application of Sulfonamides to Open Wounds," which appeared in the February 19 issue of The Journal, page 544. This is not an extremely uncommon occurrence, and I have repeatedly observed it. It can certainly not be explained by assuming that excessive crystals of sulfanilamide would physically hamper closure of the wound, because this substance is sufficiently soluble in body fluid to remove this threat soon after application. With regard to change in clot retraction when sulfanilamide is mixed with blood, I would like to quote some in vitro experiments using 0.1 Gm. of sulfanilamide added to 5 cc. of whole blood and the test tube inverted once. Coagulation occurred in seven minutes. After one hour serum was present in the test tube, and after three hours the clot was completely retracted and even appeared more retracted than in the control tubes. Thus the mechanism cannot be initiated due to alteration of the clotting mechanism. Exactly what the mechanism is is not entirely clear at present. The phenomenon furthermore happens only in few subjects, but to my mind sufficiently often to demand an explanation. Perhaps sulfanilamide and other sulfonamide compounds antagonize the substance necessary for the contractility of capillaries in the wound. Work done by myself and others seems to point to the possibility that vitamin C is necessary to prevent certain toxic effects of the sulfonamides. It is possible that sulfanilamide might bind the local reserves of vitamin C and not allow a sufficient amount for its other functions. Other factors may be, and probably are, involved. Another reason for the initiation of bleeding when sulfanilamide is added to a wound might be a procaine-like activity. The structural formulae of procaine and sulfanilamide are similar. The action of procaine as a vasodilator is well known, and is one of the reasons for including epinephrine in anaesthetic mixtures. Sulfanilamide may act similarly. These facts would not entirely explain the absence of clotting once the blood has left the immediate vicinity of the wound. Some other substance keeps the blood from clotting *in vivo* that has not been taken into consideration in the *in vitro* experiment quoted above. Further work along this line is indicated. Louis Pelner, M.D., Brooklyn.